

Access DB#

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Amelinda Wake Examiner #: TS663 Date: 2/17/2004
 Art Unit: 1157 Phone Number 301-212-1337 Serial Number: 101069136
 Mail Box and Bldg/Room Location: PEM 900 Results Format Preferred (circle): PAPER DISK E-MAIL
9D64

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Bib Sheet Ratchet

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for a positive-working resin comprising an acid generator meeting the limitations of a1 to a3. All three structures are depicted in the attached claims.

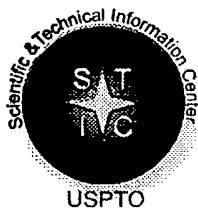
Claim 4 provides a structure for a3 as do claims 10-14. Thank you.

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

Searcher: _____	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: _____	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

- Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28





STIC Search Report

EIC 1700

STIC Database Tracking Number: 114928

TO: Amanda Walke
Location: REM9D64
Art Unit : 1752
February 23, 2004

Case Serial Number: 10069136

From: Barba Koroma
Location: EIC 1700
REM EO4 A30
Phone: 571 272 2546

barba.koroma@uspto.gov

Search Notes

Examiner Walke,
Please find attached results of the search you requested. Various components of the claimed invention as spelt out in the claims were searched in REGISTRY and CAPLUS databases.

For your convenience, titles of hits have been listed to help you peruse the results set quickly. This is followed by a detailed printout of records. Please let me know if you have any questions.

Thanks.

=> file reg

FILE 'REGISTRY' ENTERED AT 14:08:57 ON 23 FEB 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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COPYRIGHT (C) 2004 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES: 22 FEB 2004 HIGHEST RN 652965-05-4
DICTIONARY FILE UPDATES: 22 FEB 2004 HIGHEST RN 652965-05-4

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file caplus

FILE 'CAPLUS' ENTERED AT 14:09:00 ON 23 FEB 2004
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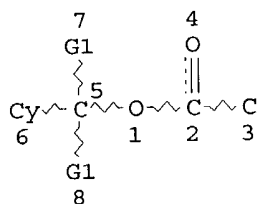
FILE COVERS 1907 - 23 Feb 2004 VOL 140 ISS 9
FILE LAST UPDATED: 22 Feb 2004 (20040222/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que

L3 SCR 2043
L5 STR

KOROMA EIC1700



VAR G1=AK/CY/CB
 NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

L8 1341 SEA FILE=REGISTRY SSS FUL L5 AND L3
 L9 685 SEA FILE=CAPLUS ABB=ON PLU=ON L8
 L10 179 SEA FILE=CAPLUS ABB=ON PLU=ON L9 AND (PHOTOGRAPH? OR
 REPROGRAPH? OR RADIATION? OR PHOTOCHEM?)
 L11 88 SEA FILE=CAPLUS ABB=ON PLU=ON L10 AND RADIATION?(4A) SENSITIV?
 L12 60 SEA FILE=CAPLUS ABB=ON PLU=ON L11 AND PATTERN?
 L14 24 SEA FILE=CAPLUS ABB=ON PLU=ON L12 AND ELECTRON(5A) BEAM?

=> d ti 1-24

L14 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Positive **radiation-sensitive** resist compositions with
 excellent sensitivity, resolution, and adhesion to substrates

L14 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Preparation of polymers for resists and their positive-working chemically
 amplified **radiation-sensitive** resist compositions

L14 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Positive-working **radiation sensitive** resist
 composition and method for **pattern** formation using the same

L14 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Positive **radiation-sensitive** resist compositions
 having high sensitivity and high resolution and their sub-quarter-micron
 lithography

L14 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Polymer, resist composition and **patterning** process

- L14 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Polymers of polycyclic compounds, resist composition and **patterning** process
- L14 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Radiation-sensitive** positive resists forming subquartermicron-order fine **patterns** and lithography on the same
- L14 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Radiation sensitive** positive resists and **electron-beam** or deep-UV lithography using the same
- L14 ANSWER 9 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Radiation-sensitive** chemically amplified positive resists and lithography using the same
- L14 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Positive-working **radiation-sensitive** resist composition suitable for subquartermicron **patterning**
- L14 ANSWER 11 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Positive-working **radiation-sensitive** resist composition
- L14 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Positive type **radiation-sensitive** composition and process for producing **pattern** with the same
- L14 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Radiation-sensitive** resin composition for chemical amplified resist
- L14 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Electron attracting group-containing polymers, high-resolution resist compositions having good transparency, and **electron-beam** or deep-UV micropatterning process for VLSI fabrication
- L14 ANSWER 15 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Ester compounds, polymers, resist compositions and **patterning** process
- L14 ANSWER 16 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Radiation-sensitive** chemically amplified positive resists and their **patterning**
- L14 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI **Radiation-sensitive** chemically amplified positive resist compositions and their **patterning**
- L14 ANSWER 18 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
TI Positive-working **radiation-sensitive** resist composition suitable for sub-quartermicron **patterning**

L14 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Positive-working **radiation-sensitive** composition and
 resist **pattern** formation using same

L14 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Positive **radiation-sensitive** resist from halogenated
 polyacrylate

L14 ANSWER 21 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Positive-working resist materials

L14 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI **Radiation-sensitive** polymers

L14 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI **Radiation-sensitive** resists

L14 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 TI Electron resist composition

=> d ibib abs hitstr ind total l14

L14 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:77035 CAPLUS
 DOCUMENT NUMBER: 140:136429
 TITLE: Positive **radiation-sensitive**
 resist compositions with excellent sensitivity,
 resolution, and adhesion to substrates
 INVENTOR(S): Senoo, Masahide; Tamura, Kazutaka; Nio, Hiroyuki
 PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004029437	A2	20040129	JP 2002-186416	20020626
PRIORITY APPLN. INFO.:			JP 2002-186416	20020626

AB The compns., useful for **patterning** with **electron**
beams or x-ray **beams**, contain polymers (A) bearing units
 becoming alkali soluble by acids, lactone units, and phenolic OH groups and
 photoacid generators (B).

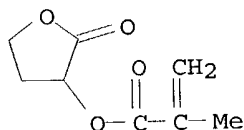
IT 610271-09-5P 649758-26-9P 649758-28-1P
 649758-30-5P 649758-31-6P 649758-33-8P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (chemical amplified pos. resists with good sensitivity to **electron**

beams or x-ray beams, resolution, and adhesion to substrates)

RN 610271-09-5 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with 2-(4-hydroxyphenyl)ethyl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

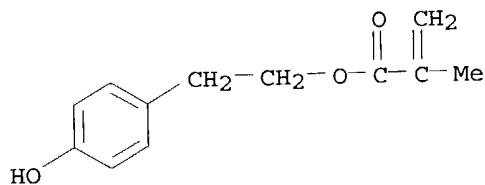
CM 1

CRN 195000-66-9
CMF C8 H10 O4



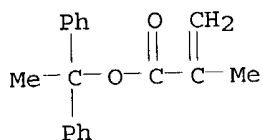
CM 2

CRN 146324-59-6
CMF C12 H14 O3



CM 3

CRN 56958-95-3
CMF C18 H18 O2



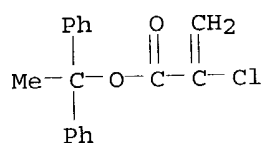
RN 649758-26-9 CAPLUS
CN 2-Propenoic acid, 2-chloro-, 1,1-diphenylethyl ester, polymer with 4-hydroxyphenyl 2-methyl-2-propenoate and tetrahydro-5-oxo-3-furanyl

KOROMA EIC1700

2-methyl-2-propenoate (9CI) (CA INDEX NAME)

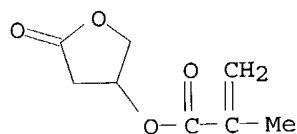
CM 1

CRN 383908-04-1
CMF C17 H15 Cl O2



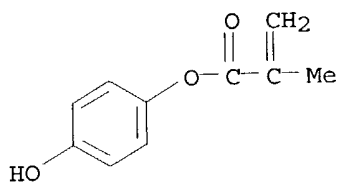
CM 2

CRN 130224-95-2
CMF C8 H10 O4



CM 3

CRN 31480-93-0
CMF C10 H10 O3

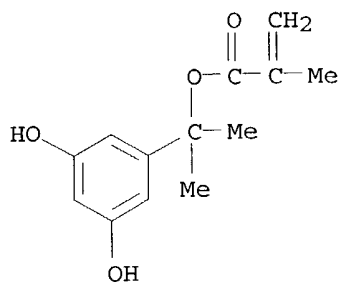


RN 649758-28-1 CAPLUS
CN 2-Propenoic acid, 2-cyano-, 1,1-diphenylethyl ester, polymer with
1-(3,5-dihydroxyphenyl)-1-methylethyl 2-methyl-2-propenoate and
1-methyl-1-(tetrahydro-2-oxo-3-furanyl)ethyl 2-propenoate (9CI) (CA INDEX
NAME)

CM 1

CRN 649758-27-0

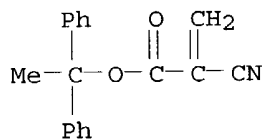
CMF C13 H16 O4



CM 2

CRN 393178-25-1

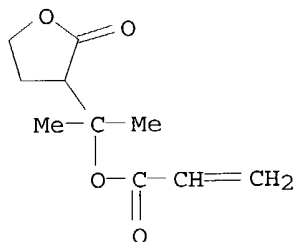
CMF C18 H15 N O2



CM 3

CRN 239784-43-1

CMF C10 H14 O4



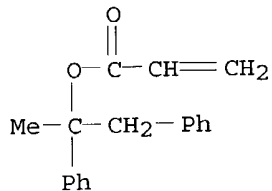
RN 649758-30-5 CAPLUS

CN 2-Propenoic acid, 2-methyl-, tetrahydro-2-oxo-2H-pyran-4-yl ester, polymer with 4-ethenylphenol and 1-methyl-1,2-diphenylethyl 2-propenoate (9CI)
(CA INDEX NAME)

CM 1

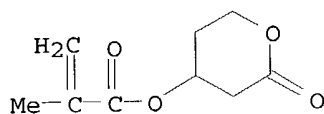
KOROMA EIC1700

CRN 649758-29-2
CMF C18 H18 O2



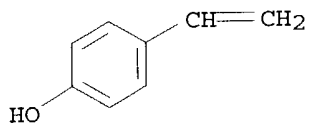
CM 2

CRN 288303-49-1
CMF C9 H12 O4



CM 3

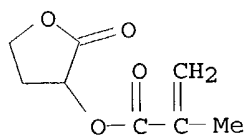
CRN 2628-17-3
CMF C8 H8 O



RN 649758-31-6 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with
2-(4-hydroxyphenyl)ethyl 2-methyl-2-propenoate, 4-(1-methylethenyl)phenol
and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX
NAME)

CM 1

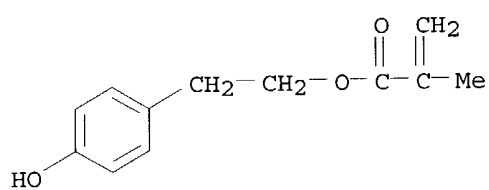
CRN 195000-66-9
CMF C8 H10 O4



CM 2

CRN 146324-59-6

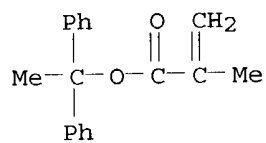
CMF C12 H14 O3



CM 3

CRN 56958-95-3

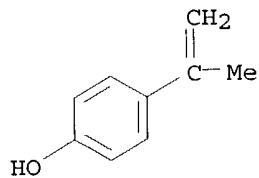
CMF C18 H18 O2



CM 4

CRN 4286-23-1

CMF C9 H10 O



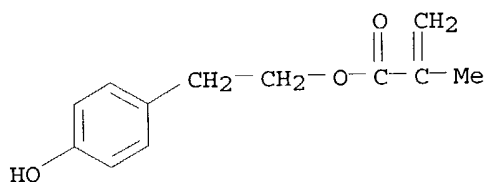
KOROMA EIC1700

RN 649758-33-8 CAPLUS
 CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with
 dihydro-3-methylene-2(3H)-furanone and 2-(4-hydroxyphenyl)ethyl
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 146324-59-6

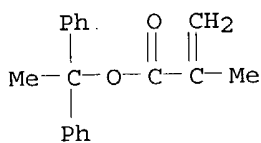
CMF C12 H14 O3



CM 2

CRN 56958-95-3

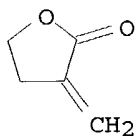
CMF C18 H18 O2



CM 3

CRN 547-65-9

CMF C5 H6 O2



IC ICM G03F007-039

ICS C08F212-14; C08F220-16; C08F220-28; C08F220-30; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)

ST photoresist **electron beam** sensitivity lactone polymer;

KOROMA EIC1700

chem amplified resist pos adhesion substrate; methacryloyloxybutyrolactone hydroxyphenylethyl methacrylate copolymer resist resolu

IT Positive photoresists
(chemical amplified pos. resists with good sensitivity to **electron beams** or x-ray **beams**, resolution, and adhesion to substrates)

IT **Electron beam** resists
X-ray resists
(pos.-working; chemical amplified pos. resists with good sensitivity to **electron beams** or x-ray **beams**, resolution, and adhesion to substrates)

IT 610271-09-5P 649758-26-9P 649758-28-1P
649758-30-5P 649758-31-6P 649758-32-7P
649758-33-8P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chemical amplified pos. resists with good sensitivity to **electron beams** or x-ray **beams**, resolution, and adhesion to substrates)

IT 66003-78-9, Triphenylsulfonium triflate
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; chemical amplified pos. resists with good sensitivity to **electron beams** or x-ray **beams**, resolution, and adhesion to substrates)

L14 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:823373 CAPLUS

DOCUMENT NUMBER: 139:314476

TITLE: Preparation of polymers for resists and their positive-working chemically amplified **radiation-sensitive** resist compositions

INVENTOR(S): Senoo, Masahide; Tamura, Kazutaka; Nio, Hiroyuki

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003301006	A2	20031021	JP 2002-110088	20020412
PRIORITY APPLN. INFO.:			JP 2002-110088	20020412

OTHER SOURCE(S): MARPAT 139:314476

AB The resist polymers are prepared by polymerizing monomers in the presence of chain-transfer agents containing ≥ 1 N, preferably, compds. represented by R1SH and/or R2SSR3 (R1-R3 = organic group containing ≥ 1 N). The compns. **sensitive to radiation** (e.g., **electron beam**, x-ray, deep UV, etc.) contain (a) the resist polymers which become alkali-soluble by action of acids and (b) **radiation-**

sensitive acid generators. Preferably, the polymers contain structural units represented by $\text{CH}_2\text{CXCO}_2\text{CR}_4\text{R}_5\text{R}_6$ [$\text{X} = \text{C1-6 alkyl, halo, cyano; R}_4\text{-R}_6 = \text{C1-6 alkyl, C6-15 aryl, C7-16 aralkyl, (CH}_2\text{)}_n\text{CO}_2\text{R}_7$; $\text{R}_7 = \text{C1-6 alkyl, C6-15 aryl, C7-16 aralkyl; } \geq 1 \text{ of R}_4\text{-R}_6 \text{ are aryl or aralkyl}$]. The polymers give fine **patterns** with good profiles by low dose.

IT **478866-34-1P**, 1,1-Diphenylethyl methacrylate- α -methacryloyloxy- γ -butyrolactone copolymer **611239-42-0P**
611239-43-1P 611239-45-3P 611239-46-4P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)

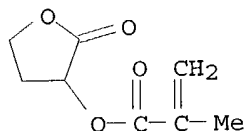
RN 478866-34-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 195000-66-9

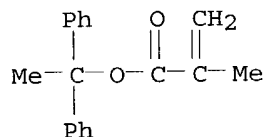
CMF C8 H10 O4



CM 2

CRN 56958-95-3

CMF C18 H18 O2



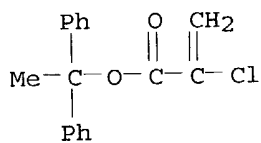
RN 611239-42-0 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1,1-diphenylethyl ester, polymer with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 383908-04-1

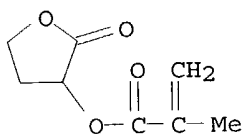
CMF C17 H15 Cl O2



CM 2

CRN 195000-66-9

CMF C8 H10 O4



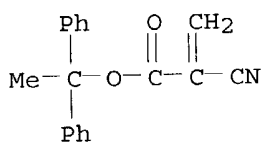
RN 611239-43-1 CAPLUS

CN 2-Propenoic acid, 2-cyano-, 1,1-diphenylethyl ester, polymer with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 393178-25-1

CMF C18 H15 N O2

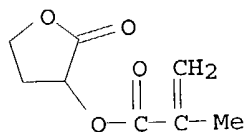


CM 2

CRN 195000-66-9

CMF C8 H10 O4

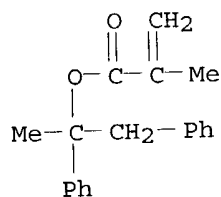
KOROMA EIC1700



RN 611239-45-3 CAPLUS
 CN 2-Propenoic acid, 2-methyl-, 1-methyl-1,2-diphenylethyl ester, polymer
 with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX
 NAME)

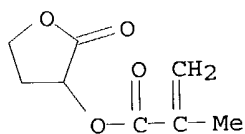
CM 1

CRN 611239-44-2
 CMF C19 H20 O2



CM 2

CRN 195000-66-9
 CMF C8 H10 O4

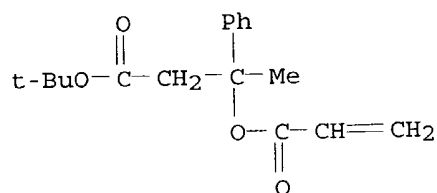


RN 611239-46-4 CAPLUS
 CN Benzenepropanoic acid, β -methyl- β -[(1-oxo-2-propenyl)oxyl]-,
 1,1-dimethylethyl ester, polymer with tetrahydro-2-oxo-3-furanyl
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 477557-76-9
 CMF C17 H22 O4

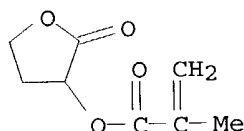
KOROMA EIC1700



CM 2

CRN 195000-66-9

CMF C8 H10 O4



- IC ICM C08F002-38
ICS C08F020-10; G03F007-039; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
- ST pos x ray resist polymer compn; **electron beam** resist
pos polymer compn; resist polymer prepn thiol chain transfer agent;
disulfide chain transfer agent resist polymer prepn
- IT Positive photoresists
(UV, deep-UV; preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)
- IT Disulfides
Thiols (organic), reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(chain-transfer agents; preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)
- IT **Electron beam** resists
X-ray resists
(pos.-working; preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)
- IT Chain transfer agents
(preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)
- IT 100-38-9, 2-(Diethylamino)ethanethiol 758-08-7 1141-88-4,
2,2'-Dithiodianiline 1240-22-8 156757-19-6, 4-Piperidinethiol
RL: RCT (Reactant); RACT (Reactant or reagent)

(chain-transfer agents; preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)

IT 195000-67-0P 478866-34-1P, 1,1-Diphenylethyl methacrylate- α -methacryloyloxy- γ -butyrolactone copolymer
611239-42-0P 611239-43-1P 611239-45-3P
611239-46-4P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of polymers by using N-containing chain-transfer agents for pos.-working chemical amplified **radiation-sensitive** resist compns.)

L14 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:390321 CAPLUS

DOCUMENT NUMBER: 138:409370

TITLE: Positive-working **radiation sensitive** resist composition and method for **pattern** formation using the same

INVENTOR(S): Ogushi, Masami; Nio, Hiroyuki; Tamura, Kazutaka

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

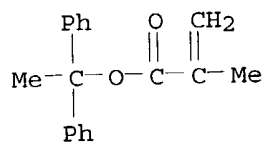
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003149813	A2	20030521	JP 2001-347378	20011113
			JP 2001-347378	20011113

PRIORITY APPLN. INFO.:
AB The title composition contains polymers having aromatic ester groups, **radiation-**, such as **electron-beam**, **sensitive** acid generator, and propylene glycol monoalkyl ether alkylate. The composition provides the **pattern** of sub-quarter micron resolution
IT 383908-02-9, 1,1-Diphenylethyl methacrylate-p-Isopropenylphenol copolymer 478866-34-1, 1,1-Diphenylethyl methacrylate/ α -Methacryloyloxy- γ -butyrolactone copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(pos.-working **radiation sensitive** resist composition)
RN 383908-02-9 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 56958-95-3

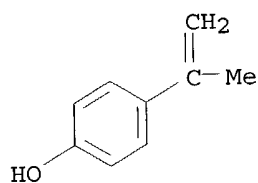
CMF C18 H18 O2



CM 2

CRN 4286-23-1

CMF C9 H10 O



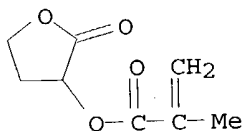
RN 478866-34-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 195000-66-9

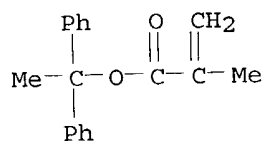
CMF C8 H10 O4



CM 2

CRN 56958-95-3

CMF C18 H18 O2



KOROMA EIC1700

IC ICM G03F007-039
ICS H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST pos **radiation** resist compn

IT **Electron beam** resists
(pos.-working; pos.-working **radiation sensitive** resist composition and method for **pattern** formation using the same)

IT Resists
(**radiation-sensitive**, pos.-working; pos.-working **radiation sensitive** resist composition and method for **pattern** formation using the same)

IT 84540-57-8, Propylene glycol monomethyl ether acetate 98516-33-7, Propylene glycol monomethyl ether propionate 383908-02-9, 1,1-Diphenylethyl methacrylate-p-Isopropenylphenol copolymer 478866-34-1, 1,1-Diphenylethyl methacrylate/ α -Methacryloyloxy- γ -butyrolactone copolymer
RL: NUU (Other use, unclassified); USES (Uses)
(pos.-working **radiation sensitive** resist composition)

IT 66003-78-9, Triphenylsulfonium triflate 528880-39-9
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working **radiation sensitive** resist composition)

L14 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:976089 CAPLUS

DOCUMENT NUMBER: 138:47317

TITLE: Positive **radiation-sensitive** resist compositions having high sensitivity and high resolution and their sub-quarter-micron lithography

INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002372785	A2	20021226	JP 2002-103440	20020405
PRIORITY APPLN. INFO.:			JP 2001-113820	A 20010412

AB The resist compns., useful for **patterning** with **electron beam**, contain (a) as acid-labile alkali-developable binders, polymers containing structure units bearing lactone residues and structure units bearing aromatic rings and (b) **radiation-sensitive** acid generators. Thus, a resist composition comprising 3 g α -methacryloyloxypantolactone-2-phenylpropyl methacrylate copolymer (reaction ratio 5.9:4) with Mw 33,000, 300 mg triphenylsulfonium triflate, and Me Cellosolve acetate was spin-coated on a HMDS-treated Si wafer,

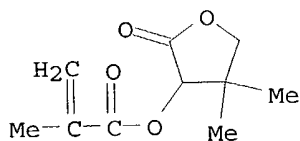
heated at 100° for 2 min to give a 0.5- μ m thick layer, subjected to **patternwise** exposure to **electron beam**, and developed with 2.38% Me4NOH to give 0.20- μ m width **patterns** (exposure 2.2 μ C/cm2).

IT 478866-24-9P 478866-26-1P 478866-28-3P
478866-29-4P 478866-30-7P 478866-31-8P
478866-32-9P, 1,1-Diphenylethyl methacrylate- β -methacryloyloxy-mevalolactone copolymer 478866-33-0P,
1,1-Diphenylethyl acrylate- α -methacryloyloxy- γ -butyrolactone copolymer 478866-34-1P, 1,1-Diphenylethyl methacrylate- α -methacryloyloxy- γ -butyrolactone copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos. **electron-beam** resist compns. and their sub-quarter-micron lithog.)

RN 478866-24-9 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

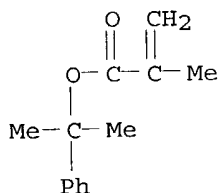
CM 1

CRN 156938-13-5
CMF C10 H14 O4



CM 2

CRN 54554-17-5
CMF C13 H16 O2



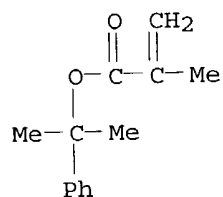
RN 478866-26-1 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, polymer with dihydro-3-methylene-2(3H)-furanone (9CI) (CA INDEX NAME)

KOROMA EIC1700

CM 1

CRN 54554-17-5

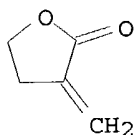
CMF C13 H16 O2



CM 2

CRN 547-65-9

CMF C5 H6 O2



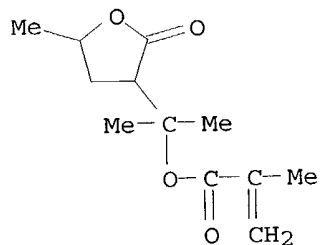
RN 478866-28-3 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, polymer with
1-methyl-1-(tetrahydro-5-methyl-2-oxo-3-furanyl)ethyl 2-methyl-2-
propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 478866-27-2

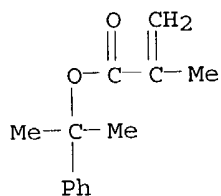
CMF C12 H18 O4



CM 2

KOROMA EIC1700

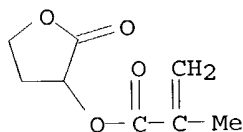
CRN 54554-17-5
CMF C13 H16 O2



RN 478866-29-4 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, polymer with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

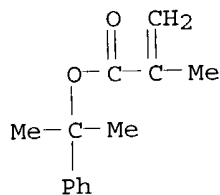
CM 1

CRN 195000-66-9
CMF C8 H10 O4



CM 2

CRN 54554-17-5
CMF C13 H16 O2

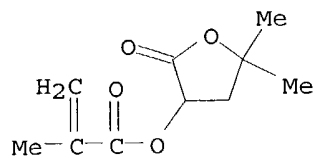


RN 478866-30-7 CAPLUS
CN 2-Propenoic acid, 2-chloro-, 1-methyl-1-phenylethyl ester, polymer with tetrahydro-5,5-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 280552-09-2

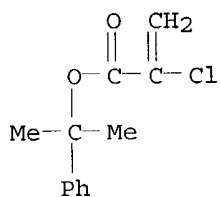
CMF C10 H14 O4



CM 2

CRN 100653-95-0

CMF C12 H13 Cl O2



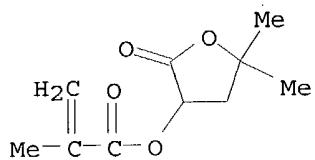
RN 478866-31-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with tetrahydro-5,5-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 280552-09-2

CMF C10 H14 O4

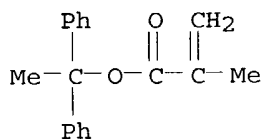


CM 2

CRN 56958-95-3

CMF C18 H18 O2

KOROMA EIC1700



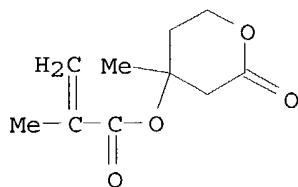
RN 478866-32-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with tetrahydro-4-methyl-2-oxo-2H-pyran-4-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 177080-66-9

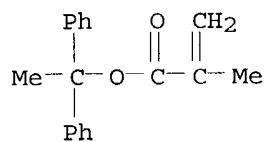
CMF C10 H14 O4



CM 2

CRN 56958-95-3

CMF C18 H18 O2



RN 478866-33-0 CAPLUS

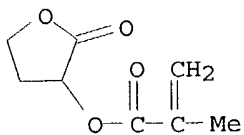
CN 2-Propenoic acid, 2-methyl-, tetrahydro-2-oxo-3-furanyl ester, polymer with 1,1-diphenylethyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 195000-66-9

CMF C8 H10 O4

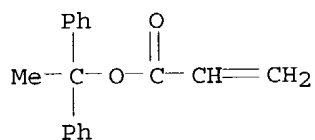
KOROMA EIC1700



CM 2

CRN 67704-05-6

CMF C17 H16 O2



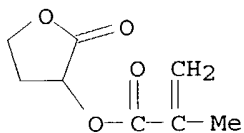
RN 478866-34-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with
tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 195000-66-9

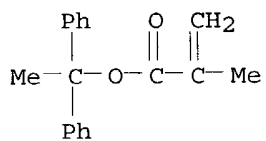
CMF C8 H10 O4



CM 2

CRN 56958-95-3

CMF C18 H18 O2



KOROMA EIC1700

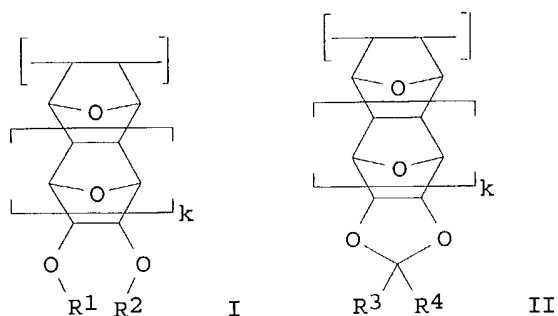
IC ICM G03F007-039
ICS C08F020-10; C08F020-42; C08F212-04; C08F214-00; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
ST pos **radiation sensitive** resist lactone methacrylate
polymer; **electron beam** resist lactone methacrylate
polymer; arom methacrylate polymer **electron beam**
resist
IT **Electron beam** resists
(pos.-working; pos. **electron-beam** resist compns.
and their sub-quarter-micron lithog.)
IT 66003-78-9, Triphenylsulfonium triflate
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; pos. **electron-beam** resist
compns. and their sub-quarter-micron lithog.)
IT **478866-24-9P** 478866-25-0P, α -Methacryloyloxy- γ -
butyrolactone-p-tetrahydropyranyloxystyrene copolymer **478866-26-1P**
478866-28-3P **478866-29-4P** **478866-30-7P**
478866-31-8P **478866-32-9P**, 1,1-Diphenylethyl
methacrylate- β -methacryloyloxymevalolactone copolymer
478866-33-0P, 1,1-Diphenylethyl acrylate- α -methacryloyloxy-
 γ -butyrolactone copolymer **478866-34-1P**, 1,1-Diphenylethyl
methacrylate- α -methacryloyloxy- γ -butyrolactone copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(pos. **electron-beam** resist compns. and their
sub-quarter-micron lithog.)

L14 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:638326 CAPLUS
DOCUMENT NUMBER: 137:192764
TITLE: Polymer, resist composition and **patterning**
process
INVENTOR(S): Nishi, Tsunehiro; Kinsho, Takeshi
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 34 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002115821	A1	20020822	US 2001-3117	20011206
US 6673517	B2	20040106		
JP 2002234915	A2	20020823	JP 2001-369711	20011204
PRIORITY APPLN. INFO.:			JP 2000-372406	A 20001207

GI



AB The present invention relates to a polymer comprising recurring units of I and/or II ($R_{1,2}$ = H, C1-15 alkyl, acyl, alkylsulfonyl, C2-15 alkoxy, alkoxyalkyl which may have halogen substituents; $R_{3,4}$ = H, C1-15 alkyl, alkoxy, C2-15 , alkoxyalkyl which may have halogen substituents, and $R_{3,4}$ may together bond with the carbon atom to form an aliphatic ring, or $R_{3,4}$ taken together, may be an oxygen atom; $k=0$ or 1), and having a Mw of 1,000-500,000. A resist composition comprising the polymer as a base resin is **sensitive** to high-energy **radiation**, has excellent **sensitivity**, resolution, etching resistance, and minimized swell and lends itself to micropatterning with **electron beams** or deep-UV.

IT 449173-05-1P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer, resist composition for micropatterning process)

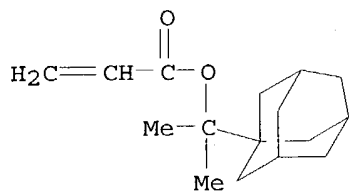
RN 449173-05-1 CAPLUS

CN 2-Propenoic acid, 1-methyl-1-tricyclo[3.3.1.1^{3,7}]dec-1-ylethyl ester, polymer with 3a,4,7,7a-tetrahydro-4,7-epoxy-1,3-benzodioxol-2-one (9CI)
(CA INDEX NAME)

CM 1

CRN 300833-10-7

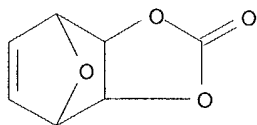
CMF C16 H24 O2



CM 2

KOROMA EIC1700

CRN 50269-96-0
CMF C7 H6 O4



IC ICM C08G065-34
NCL 528425000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
ST photoresist photolithog resin
IT Photolithography
(UV; polymer, resist composition for micropatterning process)
IT Photoresists
(polymer, resist composition for micropatterning process)
IT 449172-89-8P 449172-90-1P 449172-92-3P 449172-94-5P 449172-95-6P
449172-96-7P 449172-98-9P 449172-99-0P 449173-01-7P 449173-02-8P
449173-04-0P **449173-05-1P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer, resist composition for micropatterning process)

L14 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:522667 CAPLUS
DOCUMENT NUMBER: 137:79393
TITLE: Polymers of polycyclic compounds, resist composition and **patterning** process
INVENTOR(S): Tachibana, Seiichiro; Nakashima, Mutsuo; Nishi, Tsunehiro; Kinsho, Takeshi; Hasegawa, Koji; Watanabe, Takeru; Hatakeyama, Jun
PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 38 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002091215	A1	20020711	US 2001-986274	20011108
US 6660448	B2	20031209		
JP 2002206012	A2	20020726	JP 2001-331910	20011030
TW 536665	B	20030611	TW 2001-90127928	20011109

PRIORITY APPLN. INFO.: JP 2000-343324 A 20001110

AB The invention provides a polymer comprising recurring units containing bridged aliphatic rings in the backbone and having a hydroxyl, acyloxy or

alkoxycarbonyloxy group as well as a lactone structure bonded through a spacer, the polymer having a weight average mol. weight of 1,000-500,000. A resist

composition comprising the polymer as a base resin is **sensitive** to high-energy **radiation**, has excellent **sensitivity**, resolution, and etching resistance, and lends itself to micropatterning with **electron beams** or deep-UV. A polymer was prepared by polymerization of α -(hydroxy(5-norbornen-2-yl)methyl)- γ -butyrolactone, 2-ethyl-2-norbornyl 5-norbornene-2-carboxylate, and maleic anhydride using AIBN initiator.

IT 441071-53-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polymers of polycyclic compds., resist composition and **patterning** process)

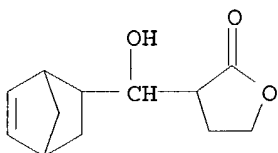
RN 441071-53-0 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-tricyclo[3.3.1.1^{3,7}]dec-1-ylethyl ester, polymer with 3-(bicyclo[2.2.1]hept-5-en-2-ylhydroxymethyl)dihydro-2(3H)-furanone and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 398488-19-2

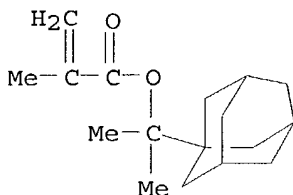
CMF C12 H16 O3



CM 2

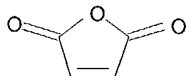
CRN 279218-76-7

CMF C17 H26 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3



IC ICM C08F024-00
NCL 526266000
CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 74
ST polycyclic compd polymer resist
IT Resists
(polymers of polycyclic compds., resist composition and **patterning** process)
IT 398488-19-2P 398488-20-5P 398488-21-6P 398488-22-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(monomer; polymers of polycyclic compds., resist composition and **patterning** process)
IT 441071-33-6P 441071-34-7P 441071-36-9P 441071-39-2P 441071-42-7P
441071-45-0P 441071-47-2P 441071-49-4P 441071-50-7P 441071-51-8P
441071-53-0P 441071-57-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers of polycyclic compds., resist composition and **patterning** process)
IT 96-48-0, γ -Butyrolactone 108-24-7, Acetic anhydride 5061-21-2,
 α -Bromo- γ -butyrolactone 5453-80-5, 5-Norbornene-2-carbaldehyde 80376-88-1, Bicyclo[2.2.1]hept-5-ene-2-acetaldehyde
RL: RCT (Reactant); RACT (Reactant or reagent)
(polymers of polycyclic compds., resist composition and **patterning** process)

L14 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:408362 CAPLUS
DOCUMENT NUMBER: 136:409033
TITLE: **Radiation-sensitive** positive
resists forming subquartermicron-order fine
patterns and lithography on the same
INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Seo, Masahide
PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KOROMA EIC1700

 JP 2002156762 A2 20020531 JP 2000-352490 20001120
 PRIORITY APPLN. INFO.: JP 2000-352490 20001120

AB The resists, forming micropatterns suited for masks in semiconductor device fabrication, contain resins whose alkali-soluble groups (e.g., phenolic OH and/or carboxyls) are protected with acid-leaving groups CR1R2R3 [R1-3 = (cyclo)alkyl, aromatic ring (bearing electron-donating groups); ≥1 of R1-3 is aromatic ring bearing electron-donating groups] and **radiation-sensitive** acid generators.

IT **383908-23-4P**, Itaconic anhydride-2-(4-methoxyphenyl)-2-propyl methacrylate copolymer **383908-27-8P 383908-31-4P 383908-33-6P 383908-35-8P 431943-85-0P**, 2-(p-Methoxyphenyl)-2-propyl methacrylate-4-hydroxystyrene copolymer **431943-88-3P**

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(**radiation-sensitive** pos. resists forming subquarter-micron-order fine **patterns** by lithog.)

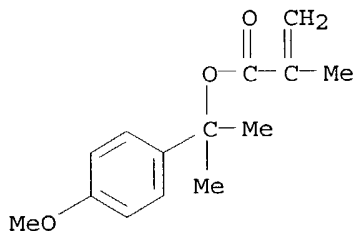
RN 383908-23-4 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-methoxyphenyl)-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 129622-05-5

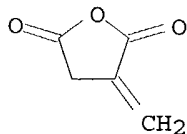
CMF C14 H18 O3



CM 2

CRN 2170-03-8

CMF C5 H4 O3



KOROMA EIC1700

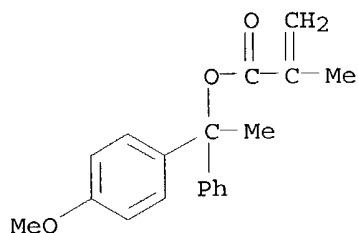
RN 383908-27-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-methoxyphenyl)-1-phenylethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 383908-26-7

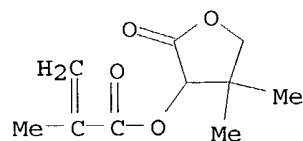
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CM 2

CRN 156938-13-5

CMF C10 H14 O4



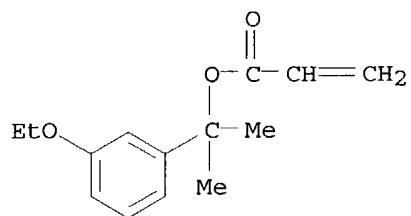
RN 383908-31-4 CAPLUS

CN 2-Propenoic acid, 1-(3-ethoxyphenyl)-1-methylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-30-3

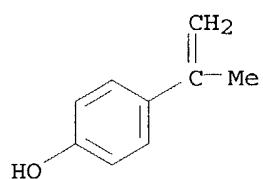
CMF C14 H18 O3



CM 2

CRN 4286-23-1

CMF C9 H10 O



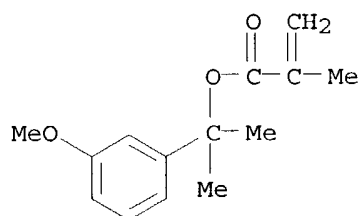
RN 383908-33-6 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with
1-(3-methoxyphenyl)-1-methylethyl 2-methyl-2-propenoate (9CI) (CA INDEX
NAME)

CM 1

CRN 383908-32-5

CMF C14 H18 O3

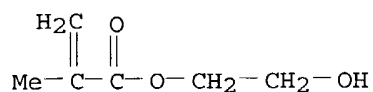


CM 2

CRN 868-77-9

CMF C6 H10 O3

KOROMA EIC1700



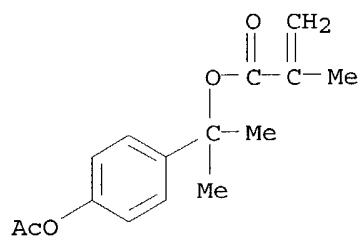
RN 383908-35-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-[4-(acetyloxy)phenyl]-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 383908-34-7

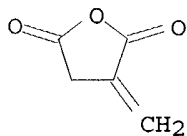
CMF C15 H18 O4



CM 2

CRN 2170-03-8

CMF C5 H4 O3



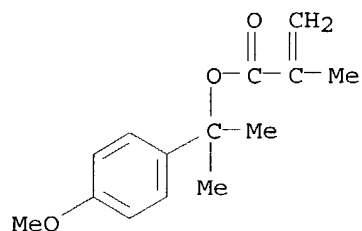
RN 431943-85-0 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-methoxyphenyl)-1-methylethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 129622-05-5

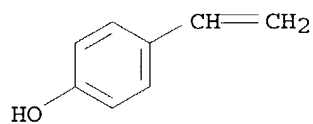
CMF C14 H18 O3



CM 2

CRN 2628-17-3

CMF C8 H8 O



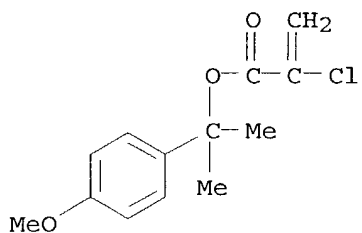
RN 431943-88-3 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-(4-methoxyphenyl)-1-methylethyl ester,
polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate
(9CI) (CA INDEX NAME)

CM 1

CRN 431943-87-2

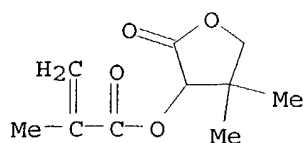
CMF C13 H15 Cl O3



CM 2

CRN 156938-13-5

CMF C10 H14 O4



- IC ICM G03F007-039
ICS C08F012-22; C08F020-10; C08F020-50; C08K005-00; C08L101-02;
H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 38, 76
- ST **electron beam** resist acid leaving protective group;
subquartermicron **patterning** UV photoresist methoxyphenylpropyl
methacrylate
- IT Photolithography
Photoresists
(UV; **radiation-sensitive** pos. resists forming
subquarter-micron-order fine **patterns** by lithog.)
- IT **Electron beam** lithography
Electron beam resists
Semiconductor device fabrication
(**radiation-sensitive** pos. resists forming
subquarter-micron-order fine **patterns** by lithog.)
- IT Resists
(**radiation-sensitive; radiation-**
sensitive pos. resists forming subquarter-micron-order fine
patterns by lithog.)
- IT 66003-78-9, Triphenylsulfonium triflate
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);
PYP (Physical process); TEM (Technical or engineered material use); PROC
(Process); USES (Uses)
(acid generators; **radiation-sensitive** pos. resists
forming subquarter-micron-order fine **patterns** by lithog.)
- IT **383908-23-4P**, Itaconic anhydride-2-(4-methoxyphenyl)-2-propyl
methacrylate copolymer **383908-27-8P 383908-31-4P**
383908-33-6P 383908-35-8P 431943-85-0P,
2-(p-Methoxyphenyl)-2-propyl methacrylate-4-hydroxystyrene copolymer
431943-88-3P
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); PYP (Physical process); TEM (Technical or engineered material
use); PREP (Preparation); PROC (Process); USES (Uses)
(**radiation-sensitive** pos. resists forming
subquarter-micron-order fine **patterns** by lithog.)

L14 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:407175 CAPLUS
DOCUMENT NUMBER: 136:409031
TITLE: **Radiation sensitive** positive
resists and **electron-beam** or
deep-UV lithography using the same

INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide
 PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002156761	A2	20020531	JP 2000-352489	20001120

PRIORITY APPLN. INFO.: JP 2000-352489 20001120

AB The resists comprise (a) alkali-soluble resins whose phenolic OH and alkali-soluble groups are protected with acid-leaving groups and (b) **radiation-sensitive** acid generators. The resists form **patterns** with subquatermicron-level resolution, suited for masks in semiconductor device fabrication.

IT **383908-37-0P**, Itaconic anhydride-2-(p-tetrahydropyranyloxyphenyl)-2-propyl methacrylate copolymer
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (**radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

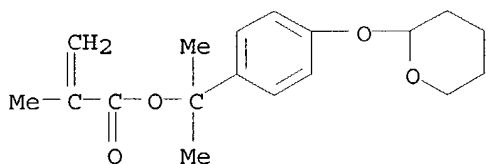
RN 383908-37-0 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-[4-[(tetrahydro-2H-pyran-2-yl)oxy]phenyl]ethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 383908-36-9

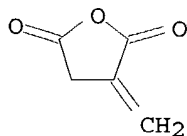
CMF C18 H24 O4



CM 2

CRN 2170-03-8

CMF C5 H4 O3



IT 383908-39-2 383908-45-0 383908-48-3
383908-50-7 383908-52-9 431945-12-9

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(radiation sensitive pos. resists with superior sensitivity and their patterning in high resolution)

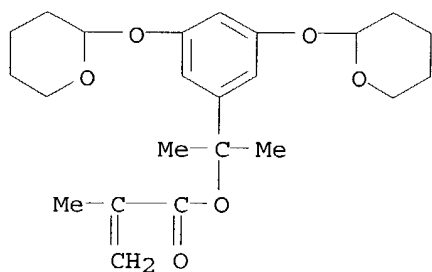
RN 383908-39-2 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-[3,5-bis[(tetrahydro-2H-pyran-2-yl)oxy]phenyl]-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 383908-38-1

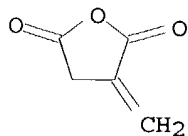
CMF C23 H32 O6



CM 2

CRN 2170-03-8

CMF C5 H4 O3



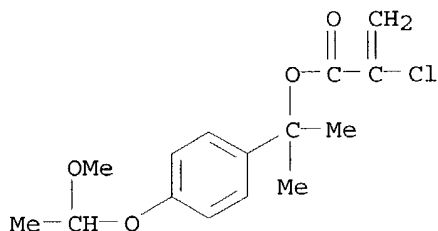
RN 383908-45-0 CAPLUS

KOROMA EIC1700

CN 2-Propenoic acid, 2-chloro-, 1-[4-(1-methoxyethoxy)phenyl]-1-methylethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

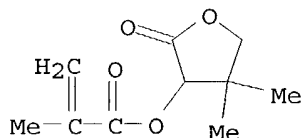
CM 1

CRN 383908-44-9
CMF C15 H19 Cl O4



CM 2

CRN 156938-13-5
CMF C10 H14 O4

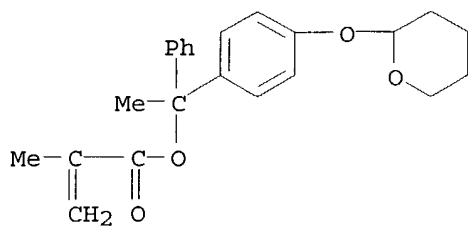


RN 383908-48-3 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-phenyl-1-[4-[(tetrahydro-2H-pyran-2-yl)oxy]phenyl]ethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

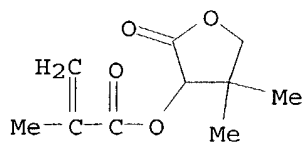
CRN 383908-47-2
CMF C23 H26 O4



CM 2

CRN 156938-13-5

CMF C10 H14 O4



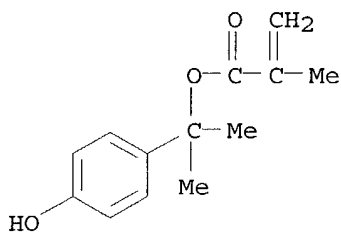
RN 383908-50-7 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-hydroxyphenyl)-1-methylethyl ester,
polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 383908-49-4

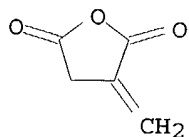
CMF C13 H16 O3



CM 2

CRN 2170-03-8

CMF C5 H4 O3



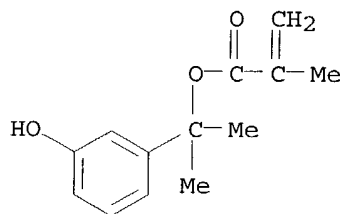
RN 383908-52-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(3-hydroxyphenyl)-1-methylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-51-8

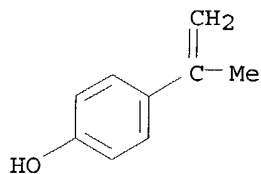
CMF C13 H16 O3



CM 2

CRN 4286-23-1

CMF C9 H10 O



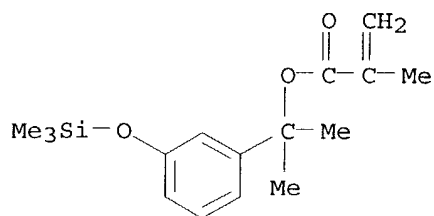
RN 431945-12-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-[3-[(trimethylsilyl)oxy]phenyl]ethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 431945-11-8

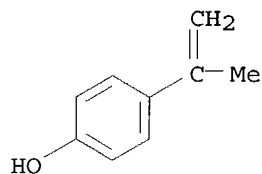
CMF C16 H24 O3 Si



CM 2

CRN 4286-23-1

CMF C9 H10 O



IC ICM G03F007-039
ICS C08L025-18; C08L033-14; C08L101-06; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76

ST **electron beam** resist acid leaving group protected;
subquarter micron **patterning** chem amplified photoresist;
itaconic anhydride pyraniloxypheylpropyl methacrylate copolymer

IT Photolithography
(UV, deep-UV, i-line; **radiation sensitive** pos.
resists with superior sensitivity and their **patterning** in high resolution)

IT Positive photoresists
(UV, deep-UV; **radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

IT **Electron beam** lithography
Electron beam resists
Semiconductor device fabrication
(**radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

IT Resists
(**radiation-sensitive**, pos.; **radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

IT 66003-78-9, Triphenylsulfonium triflate
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

KOROMA EIC1700

(acid generators; **radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

IT 383908-37-0P, Itaconic anhydride-2-(p-tetrahydropyranyloxyphenyl)-2-propyl methacrylate copolymer
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (**radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

IT 383908-39-2 383908-41-6 383908-45-0
 383908-48-3 383908-50-7 383908-52-9
 431945-12-9
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (**radiation sensitive** pos. resists with superior sensitivity and their **patterning** in high resolution)

L14 ANSWER 9 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:407174 CAPLUS

DOCUMENT NUMBER: 136:409030

TITLE: **Radiation-sensitive** chemically amplified positive resists and lithography using the same

INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

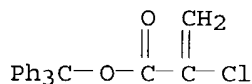
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002156760	A2	20020531	JP 2000-352488	20001120
PRIORITY APPLN. INFO.:			JP 2000-352488	20001120
AB The resists, showing good sensitivity and high pattern resolution, contain (a) compds. or acrylate polymers (Markush given) having carboxyls which are protected with ≥ 3 -aromatic-ring-bearing acid-leaving protective groups and (b) radiation-sensitive acid generators.				
IT 383908-14-3P, p-Hydroxy- α -methylstyrene-trityl α -chloroacrylate copolymer				
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)				
(chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for electron beam lithog.)				
RN 383908-14-3	CAPLUS			
CN 2-Propenoic acid, 2-chloro-, triphenylmethyl ester, polymer with				

4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-13-2

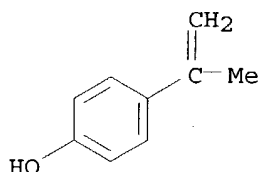
CMF C22 H17 Cl O2



CM 2

CRN 4286-23-1

CMF C9 H10 O



IT 383908-19-8 383908-20-1 383908-22-3
431943-52-1

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for **electron beam** lithog.)

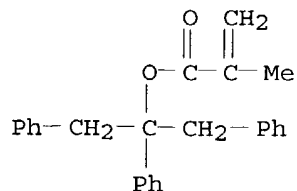
RN 383908-19-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,2-diphenyl-1-(phenylmethyl)ethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-18-7

CMF C25 H24 O2

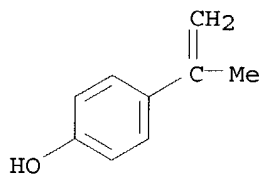


KOROMA EIC1700

CM 2

CRN 4286-23-1

CMF C9 H10 O



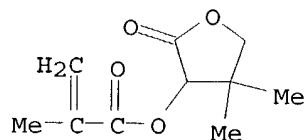
RN 383908-20-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, tetrahydro-4,4-dimethyl-2-oxo-3-furanyl ester, polymer with triphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 156938-13-5

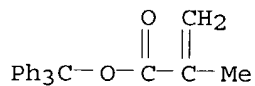
CMF C10 H14 O4



CM 2

CRN 19302-93-3

CMF C23 H20 O2



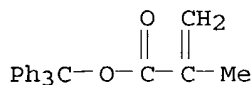
RN 383908-22-3 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with triphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

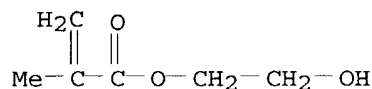
KOROMA EIC1700

CRN 19302-93-3
CMF C23 H20 O2



CM 2

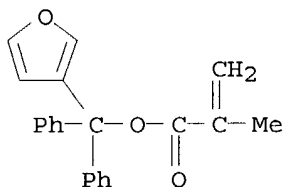
CRN 868-77-9
CMF C6 H10 O3



RN 431943-52-1 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 3-furanyldiphenylmethyl ester, homopolymer
(9CI) (CA INDEX NAME)

CM 1

CRN 431943-51-0
CMF C21 H18 O3



IC ICM G03F007-039
ICS C08K005-00; C08L033-04; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 38, 76
ST **electron beam** resist trityl chloroacrylate polymer;
sensitivity resoln photoresist trityl protected polymer
IT Photoresists
(UV, i-line; chemical amplified pos. resists containing polymers bearing
acid-leaving bulky protective groups for **electron
beam** lithog.)
IT Photolithography
(UV; chemical amplified pos. resists containing polymers bearing
acid-leaving

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bulky protective groups for **electron beam** lithog.)

IT **Electron beam** lithography
Electron beam resists
 (chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for **electron beam** lithog.)

IT Resists
 (**radiation-sensitive**, pos.; chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for **electron beam** lithog.)

IT 66003-78-9, Triphenylsulfonium triflate
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (acid generators; chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for **electron beam** lithog.)

IT **383908-14-3P**, p-Hydroxy- α -methylstyrene-trityl α -chloroacrylate copolymer
 RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for **electron beam** lithog.)

IT **383908-19-8 383908-20-1 383908-22-3 431943-52-1**
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (chemical amplified pos. resists containing polymers bearing acid-leaving bulky protective groups for **electron beam** lithog.)

L14 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:99076 CAPLUS
 DOCUMENT NUMBER: 136:175461
 TITLE: Positive-working **radiation-sensitive** resist composition suitable for subquartermicron **patterning**
 INVENTOR(S): Tamura, Kazutaka; Nio, Hiroyuki; Senoo, Masahide
 PATENT ASSIGNEE(S): Toray Industries, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002040661	A2	20020206	JP 2000-221889	20000724
PRIORITY APPLN. INFO.:			JP 2000-221889	20000724
AB The invention relates to a pos.-working radiation-				

sensitive resist composition suitable for a subquartermicron order **patterning** to fabricate integrate circuits and lithog. masks, wherein the resist composition comprises (a) a polymer comprising structural repeating units of $\text{CH}_2:\text{C}(\text{CO}_2\text{A})\text{X}$ [$\text{X} = \text{C1-6-alkyl, halo, CN; A} = \text{organic group}$] and $\text{CH}_2:\text{C}(\text{CO}_2\text{B})\text{Y}$ [$\text{Y} = \text{C1-6-alkyl, halo, CN; B} = \text{alicyclic alkyl}$], and having a glass transition point T_g of $80-150^\circ$, and (b) a **radiation-acid generator**. The resist composition is especially suitable for an **electron-beam** or x-ray lithog.

IT 395683-50-8P

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (pos.-working **electron beam** resist composition suitable for subquartermicron **patterning**)

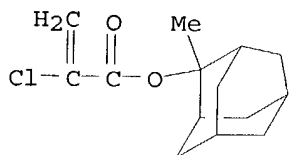
RN 395683-50-8 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-methyl-1-phenylethyl ester, polymer with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-chloro-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 367931-36-0

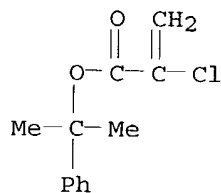
CMF C14 H19 Cl O2



CM 2

CRN 100653-95-0

CMF C12 H13 Cl O2



IC ICM G03F007-039

ICS C08F002-50; C08F220-12; C08F220-42; C08L005-00; C08L033-04; C08L033-18; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

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Section cross-reference(s): 38, 76

ST pos working photoresist **electron beam** resist x ray
subquartermicron

IT **Electron beam** resists
Positive photoresists
X-ray resists
(pos.-working **radiation-sensitive** resist composition
suitable for subquartermicron **patterning**)

IT 66003-78-9, Triphenylsulfonium triflate
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); TEM (Technical or engineered material use); PROC (Process); USES
(Uses)
(acid generator; pos.-working **electron beam** resist
composition suitable for subquartermicron **patterning**)

IT **395683-50-8P** 396095-01-5P 396095-04-8P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
(Physical process); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(pos.-working **electron beam** resist composition suitable
for subquartermicron **patterning**)

L14 ANSWER 11 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:82309 CAPLUS

DOCUMENT NUMBER: 136:142611

TITLE: Positive-working **radiation-sensitive**
resist composition

INVENTOR(S): Senoo, Masahide; Tamura, Kazutaka; Nio, Hiroyuki

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002031891	A2	20020131	JP 2000-216050	20000717
PRIORITY APPLN. INFO.:			JP 2000-216050	20000717

AB The composition comprises a polymer having repeating units CH₂CX(CO₂A) and CH₂CY(CO₂B) (X = C1-6 alkyl, halo, cyano; A is an organic group containing an aromatic ring. and is bonded with O through tertiary C; Y = C1-6 alkyl, H, halo, cyano; when X = alkyl, B = C2-16 organic group containing secondary or tertiary alc. OH group; when X = halo or cyano, B = C1-16 organic group containing primary, secondary, or tertiary alc. OH group) and an acid generator. The composition provides high resolution and sensitivity and is especially

suitable for **patterning** semiconductor integrated circuits,
lithog. masks, etc.

IT **393178-18-2**, 2-Hydroxybutyl methacrylate-1-methyl-1-phenylethyl
methacrylate copolymer **393178-19-3**, 1,1-Diphenylethyl
methacrylate-2-hydroxy-2-methylpropyl methacrylate copolymer

393178-20-6, 2-Hydroxyethyl methacrylate-1-methyl-1-phenylethyl- α -chloroacrylate copolymer 393178-21-7 393178-22-8

393178-23-9, 2-Hydroxyethyl methacrylate-1-methyl-1-phenylethyl- α -cyanoacrylate copolymer 393178-24-0, 2-Hydroxypropyl

methacrylate-1-methyl-1-phenylethyl- α -cyanoacrylate copolymer

393178-27-3, 1,1-Diphenylethyl- α -cyanoacrylate-p-(1-hydroxy-1-methylethyl)phenyl methacrylate copolymer

RL: TEM (Technical or engineered material use); USES (Uses)

(pos.-working **radiation-sensitive** resist composition

containing OH group-containing acrylate copolymer)

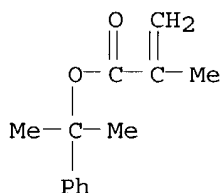
RN 393178-18-2 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-hydroxybutyl ester, polymer with 1-methyl-1-phenylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 54554-17-5

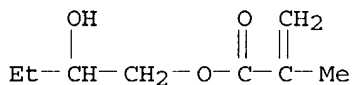
CMF C13 H16 O2



CM 2

CRN 13159-51-8

CMF C8 H14 O3



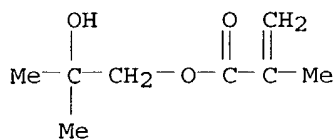
RN 393178-19-3 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with 2-hydroxy-2-methylpropyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 345896-14-2

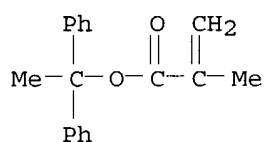
CMF C8 H14 O3



CM 2

CRN 56958-95-3

CMF C18 H18 O2



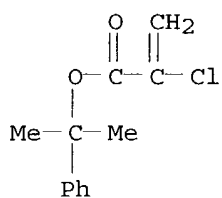
RN 393178-20-6 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-methyl-1-phenylethyl ester, polymer with 2-hydroxyethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 100653-95-0

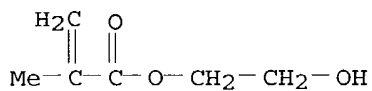
CMF C12 H13 Cl O2



CM 2

CRN 868-77-9

CMF C6 H10 O3



KOROMA EIC1700

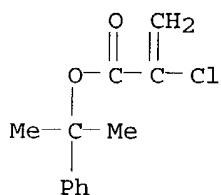
RN 393178-21-7 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-methyl-1-phenylethyl ester, polymer with
2-hydroxy-3-phenoxypropyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 100653-95-0

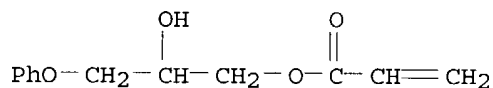
CMF C12 H13 Cl O2



CM 2

CRN 16969-10-1

CMF C12 H14 O4



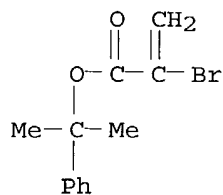
RN 393178-22-8 CAPLUS

CN 2-Propenoic acid, 2-bromo-, 1-methyl-1-phenylethyl ester, polymer with
1-hydroxy-1-methylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 334474-43-0

CMF C12 H13 Br O2

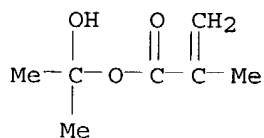


CM 2

CRN 2791-00-6

KOROMA EIC1700

CMF C7 H12 O3



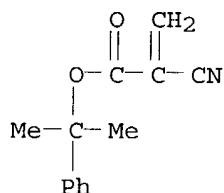
RN 393178-23-9 CAPLUS

CN 2-Propenoic acid, 2-cyano-, 1-methyl-1-phenylethyl ester, polymer with 2-hydroxyethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 326475-63-2

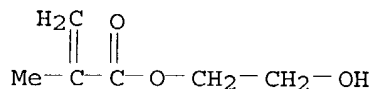
CMF C13 H13 N O2



CM 2

CRN 868-77-9

CMF C6 H10 O3



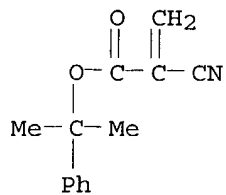
RN 393178-24-0 CAPLUS

CN 2-Propenoic acid, 2-cyano-, 1-methyl-1-phenylethyl ester, polymer with 2-hydroxypropyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 326475-63-2

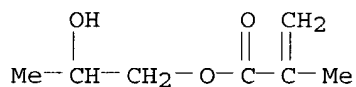
CMF C13 H13 N O2



CM 2

CRN 923-26-2

CMF C7 H12 O3



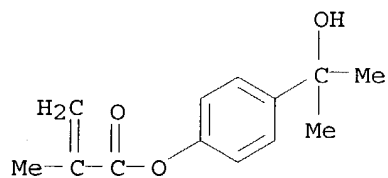
RN 393178-27-3 CAPLUS

CN 2-Propenoic acid, 2-cyano-, 1,1-diphenylethyl ester, polymer with
4-(1-hydroxy-1-methylethyl)phenyl 2-methyl-2-propenoate (9CI) (CA INDEX
NAME)

CM 1

CRN 393178-26-2

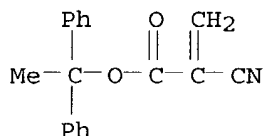
CMF C13 H16 O3



CM 2

CRN 393178-25-1

CMF C18 H15 N O2



IC ICM G03F007-039
ICS C08F220-16; C08F220-42; C08K005-00; C08L033-14; C08L033-22;
H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 76

ST pos working **radiation sensitive** resist compn hydroxyl
acrylate copolymer

IT **Electron beam** resists
Semiconductor device fabrication
X-ray resists
(pos.-working **radiation-sensitive** resist composition
containing OH group-containing acrylate copolymer)

IT 66003-78-9, Triphenylsulfonium triflate
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator; pos.-working **radiation-sensitive**
resist composition containing OH group-containing acrylate copolymer)

IT **393178-18-2**, 2-Hydroxybutyl methacrylate-1-methyl-1-phenylethyl
methacrylate copolymer **393178-19-3**, 1,1-Diphenylethyl
methacrylate-2-hydroxy-2-methylpropyl methacrylate copolymer
393178-20-6, 2-Hydroxyethyl methacrylate-1-methyl-1-phenylethyl-
 α -chloroacrylate copolymer **393178-21-7** **393178-22-8**
393178-23-9, 2-Hydroxyethyl methacrylate-1-methyl-1-phenylethyl-
 α -cyanoacrylate copolymer **393178-24-0**, 2-Hydroxypropyl
methacrylate-1-methyl-1-phenylethyl- α -cyanoacrylate copolymer
393178-27-3, 1,1-Diphenylethyl- α -cyanoacrylate-p-(1-hydroxy-
1-methylethyl)phenyl methacrylate copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working **radiation-sensitive** resist composition
containing OH group-containing acrylate copolymer)

L14 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:935894 CAPLUS

DOCUMENT NUMBER: 136:77253

TITLE: Positive type **radiation-sensitive**
composition and process for producing **pattern**
with the same

INVENTOR(S): Niwa, Hiroyuki; Tamura, Kazutaka; Senoo, Masahide

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: PCT Int. Appl., 57 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

Primary

PATENT INFORMATION:

This Application

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001098833	A1	20011227	WO 2001-JP315	20010119
W: KR, SG, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2002006497	A2	20020109	JP 2000-192298	20000627
EP 1229390	A1	20020807	EP 2001-901436	20010119
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2002082439	A2	20020322	JP 2001-176871	20010612
US 2003003392	A1	20030102	<u>US 2002-69136</u>	20020222

PRIORITY APPLN. INFO.:

JP 2000-187335	A	20000622
JP 2000-192298	A	20000627
WO 2001-JP315	W	20010119

AB The invention relates to a pos. type **radiation-sensitive** composition comprising (A) a compound in which an alkali-soluble group comprising a carboxyl group or phenolic hydroxyl group has been protected by an acid-eliminable group (a) which is any of the following (a1) to (a3), and (B) an acid generator which generates an acid upon irradiation with a **radiation**; and a method of forming a resist **pattern** using the composition (a1) The acid-eliminable group (a) is -CR₃, provided that at least two of the R's are aromatic rings. (The alkali-soluble group is a carboxyl group.). (a2) The acid-eliminable group (a) is -CR₃, provided that at least one of the R's is an aromatic ring having an electron-donating group. (a3) The acid-eliminable group (a) has an alkali-soluble group (a') or has an alkali-soluble group (a'') protected by an acid-eliminable group.

IT **383908-02-9P**, 1,1-Diphenylethyl methacrylate-p-hydroxy- α -methylstyrene copolymer

RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(pos. type **radiation-sensitive** composition and process for producing **pattern** with the same)

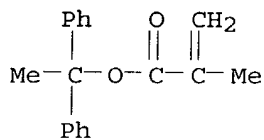
RN **383908-02-9** CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 56958-95-3

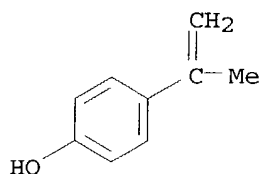
CMF C18 H18 O2



CM 2

CRN 4286-23-1

CMF C9 H10 O



IT 383908-05-2 383908-11-0 383908-14-3
 383908-16-5 383908-19-8 383908-20-1
 383908-22-3 383908-23-4 383908-27-8
 383908-29-0 383908-31-4 383908-33-6
 383908-35-8 383908-37-0 383908-39-2
 383908-43-8 383908-45-0 383908-48-3
 383908-50-7 383908-52-9 383908-54-1
 383908-56-3 383908-57-4 383908-59-6
 383908-83-6 383908-84-7

RL: PEP (Physical, engineering or chemical process); TEM (Technical or
 engineered material use); PROC (Process); USES (Uses)
 (pos. type **radiation-sensitive** composition and process
 for producing **pattern** with the same)

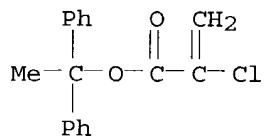
RN 383908-05-2 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1,1-diphenylethyl ester, polymer with
 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-04-1

CMF C17 H15 Cl O2

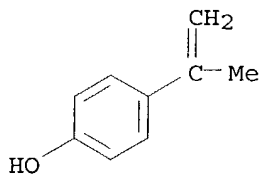


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CM 2

CRN 4286-23-1

CMF C9 H10 O



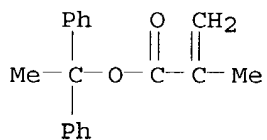
RN 383908-11-0 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-diphenylethyl ester, polymer with
2-hydroxyethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 56958-95-3

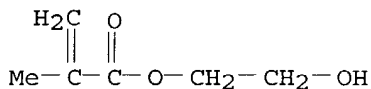
CMF C18 H18 O2



CM 2

CRN 868-77-9

CMF C6 H10 O3



RN 383908-14-3 CAPLUS

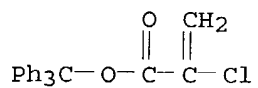
CN 2-Propenoic acid, 2-chloro-, triphenylmethyl ester, polymer with
4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-13-2

KOROMA EIC1700

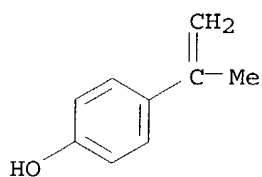
CMF C22 H17 Cl O2



CM 2

CRN 4286-23-1

CMF C9 H10 O



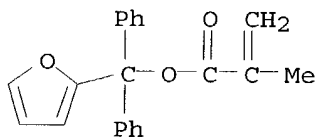
RN 383908-16-5 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-furanyldiphenylmethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-15-4

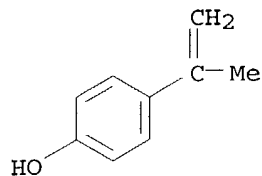
CMF C21 H18 O3



CM 2

CRN 4286-23-1

CMF C9 H10 O



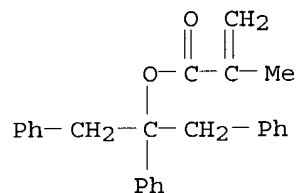
RN 383908-19-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,2-diphenyl-1-(phenylmethyl)ethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-18-7

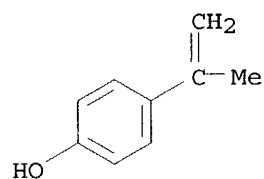
CMF C25 H24 O2



CM 2

CRN 4286-23-1

CMF C9 H10 O



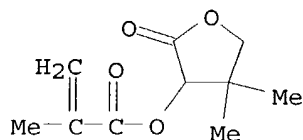
RN 383908-20-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, tetrahydro-4,4-dimethyl-2-oxo-3-furanyl ester, polymer with triphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 156938-13-5

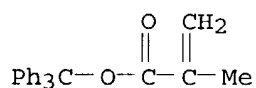
CMF C10 H14 O4



CM 2

CRN 19302-93-3

CMF C23 H20 O2



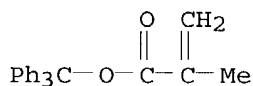
RN 383908-22-3 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with triphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 19302-93-3

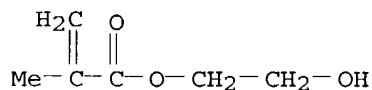
CMF C23 H20 O2



CM 2

CRN 868-77-9

CMF C6 H10 O3



RN 383908-23-4 CAPLUS

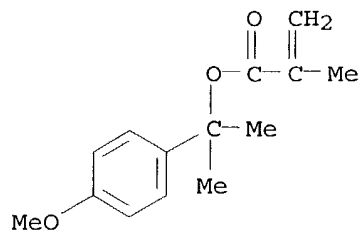
CN 2-Propenoic acid, 2-methyl-, 1-(4-methoxyphenyl)-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

KOROMA EIC1700

CRN 129622-05-5

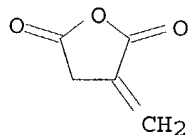
CMF C14 H18 O3



CM 2

CRN 2170-03-8

CMF C5 H4 O3



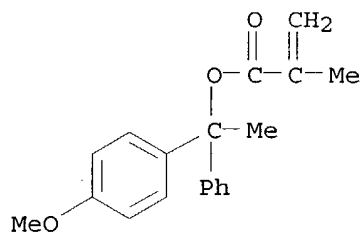
RN 383908-27-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-methoxyphenyl)-1-phenylethyl ester,
polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate
(9CI) (CA INDEX NAME)

CM 1

CRN 383908-26-7

CMF C19 H20 O3

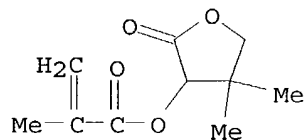


CM 2

KOROMA EIC1700

CRN 156938-13-5

CMF C10 H14 O4



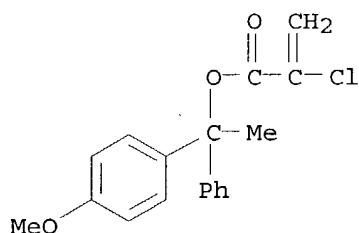
RN 383908-29-0 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-(4-methoxyphenyl)-1-phenylethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 383908-28-9

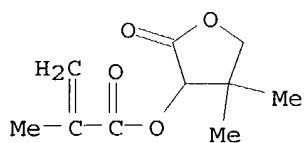
CMF C18 H17 Cl O3



CM 2

CRN 156938-13-5

CMF C10 H14 O4



RN 383908-31-4 CAPLUS

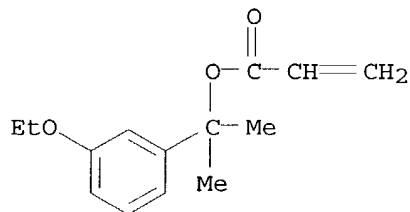
CN 2-Propenoic acid, 1-(3-ethoxyphenyl)-1-methylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

KOROMA EIC1700

CRN 383908-30-3

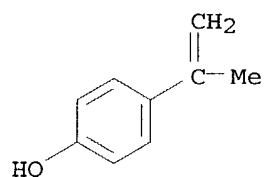
CMF C14 H18 O3



CM 2

CRN 4286-23-1

CMF C9 H10 O



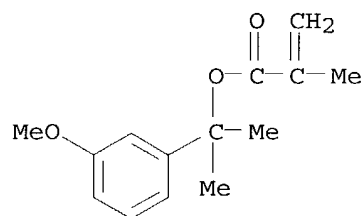
RN 383908-33-6 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with
1-(3-methoxyphenyl)-1-methylethyl 2-methyl-2-propenoate (9CI) (CA INDEX
NAME)

CM 1

CRN 383908-32-5

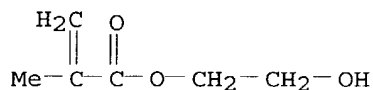
CMF C14 H18 O3



CM 2

KOROMA EIC1700

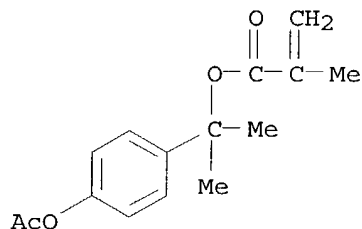
CRN 868-77-9
CMF C6 H10 O3



RN 383908-35-8 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-[4-(acetyloxy)phenyl]-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

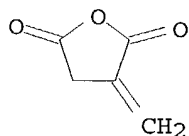
CM 1

CRN 383908-34-7
CMF C15 H18 O4



CM 2

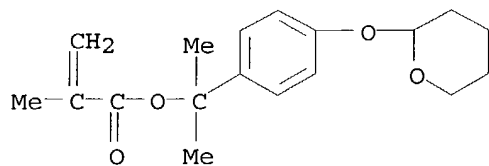
CRN 2170-03-8
CMF C5 H4 O3



RN 383908-37-0 CAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-[4-[(tetrahydro-2H-pyran-2-yl)oxy]phenyl]ethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

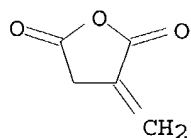
CRN 383908-36-9
CMF C18 H24 O4



CM 2

CRN 2170-03-8

CMF C5 H4 O3



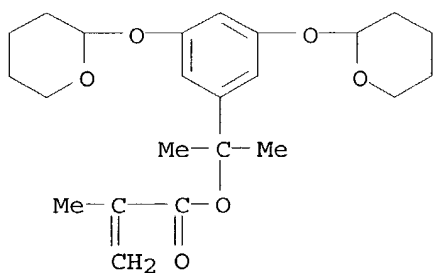
RN 383908-39-2 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-[3,5-bis[(tetrahydro-2H-pyran-2-yl)oxy]phenyl]-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 383908-38-1

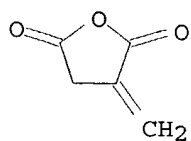
CMF C23 H32 O6



CM 2

CRN 2170-03-8

CMF C5 H4 O3



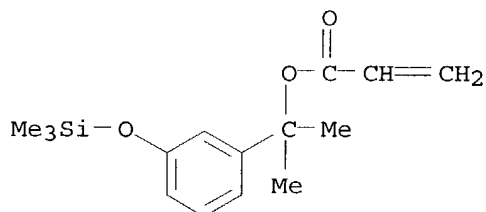
RN 383908-43-8 CAPLUS

CN 2-Propenoic acid, 1-methyl-1-[3-[(trimethylsilyl)oxy]phenyl]ethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-42-7

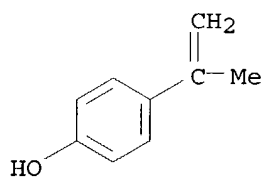
CMF C15 H22 O3 Si



CM 2

CRN 4286-23-1

CMF C9 H10 O



RN 383908-45-0 CAPLUS

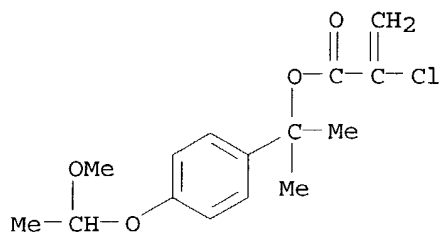
CN 2-Propenoic acid, 2-chloro-, 1-[4-(1-methoxyethoxy)phenyl]-1-methylethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 383908-44-9

CMF C15 H19 Cl O4

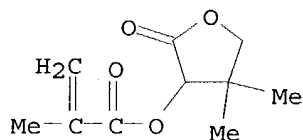
KOROMA EIC1700



CM 2

CRN 156938-13-5

CMF C10 H14 O4



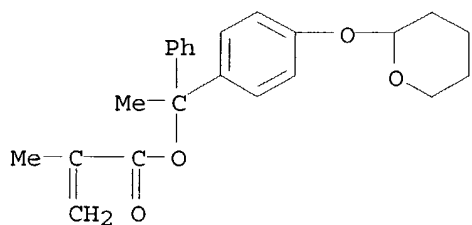
RN 383908-48-3 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-phenyl-1-[4-[(tetrahydro-2H-pyran-2-yl)oxy]phenyl]ethyl ester, polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 383908-47-2

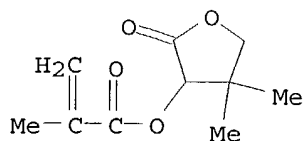
CMF C23 H26 O4



CM 2

CRN 156938-13-5

CMF C10 H14 O4



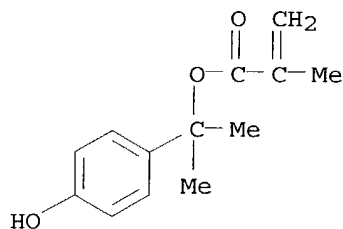
RN 383908-50-7 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-hydroxyphenyl)-1-methylethyl ester, polymer with dihydro-3-methylene-2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 383908-49-4

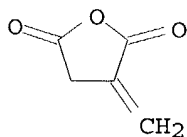
CMF C13 H16 O3



CM 2

CRN 2170-03-8

CMF C5 H4 O3



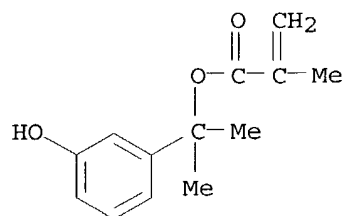
RN 383908-52-9 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(3-hydroxyphenyl)-1-methylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-51-8

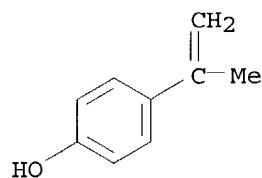
CMF C13 H16 O3



CM 2

CRN 4286-23-1

CMF C9 H10 O



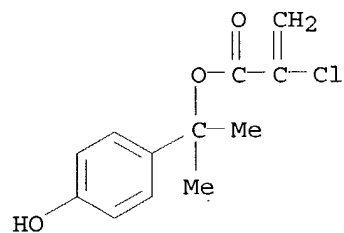
RN 383908-54-1 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-(4-hydroxyphenyl)-1-methylethyl ester,
polymer with tetrahydro-4,4-dimethyl-2-oxo-3-furanyl 2-methyl-2-propenoate
(9CI) (CA INDEX NAME)

CM 1

CRN 383908-53-0

CMF C12 H13 Cl O3

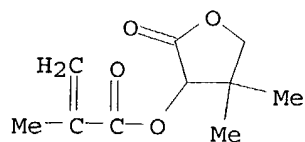


CM 2

CRN 156938-13-5

CMF C10 H14 O4

KOROMA EIC1700



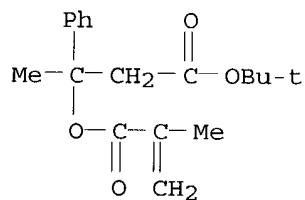
RN 383908-56-3 CAPLUS

CN Benzenepropanoic acid, β -methyl- β -[(2-methyl-1-oxo-2-propenyl)oxy]-, 1,1-dimethylethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 383908-55-2

CMF C18 H24 O4



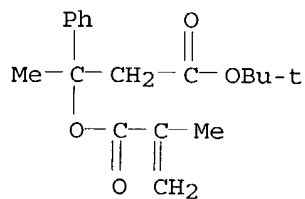
RN 383908-57-4 CAPLUS

CN Benzenepropanoic acid, β -methyl- β -[(2-methyl-1-oxo-2-propenyl)oxy]-, 1,1-dimethylethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-55-2

CMF C18 H24 O4

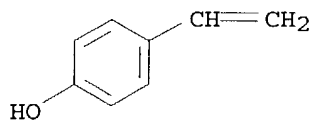


CM 2

CRN 2628-17-3

CMF C8 H8 O

KOROMA EIC1700



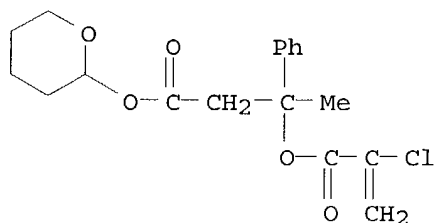
RN 383908-59-6 CAPLUS

CN Benzenepropanoic acid, β -[(2-chloro-1-oxo-2-propenyl)oxy]- β -methyl-, tetrahydro-2H-pyran-2-yl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 383908-58-5

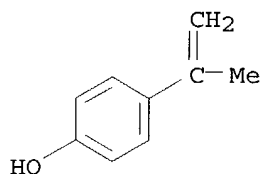
CMF C18 H21 Cl O5



CM 2

CRN 4286-23-1

CMF C9 H10 O



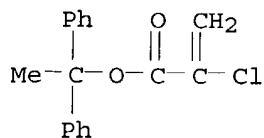
RN 383908-83-6 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1,1-diphenylethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 383908-04-1

CMF C17 H15 Cl O2



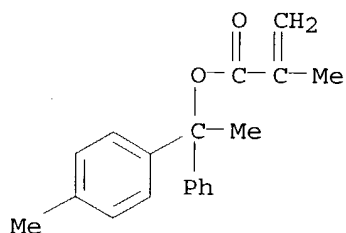
RN 383908-84-7 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-(4-methylphenyl)-1-phenylethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 383908-07-4

CMF C19 H20 O2



IC ICM G03F007-039

ICS C08F020-12; C08F020-26; C08F012-24; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38, 76

ST pos working photoresist **electron beam** resist
photolithog lithog

IT **Electron beam** lithography

Electron beam resists

Photolithography

Positive photoresists

(pos. type **radiation-sensitive** composition and process
for producing **pattern** with the same)

IT **383908-02-9P**, 1,1-Diphenylethyl methacrylate-p-hydroxy- α -methylstyrene copolymer

RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(pos. type **radiation-sensitive** composition and process
for producing **pattern** with the same)

IT 383908-05-2 383908-11-0 383908-14-3

383908-16-5 383908-19-8 383908-20-1

383908-22-3 383908-23-4 383908-25-6

383908-27-8 383908-29-0 383908-31-4

KOROMA EIC1700

383908-33-6 383908-35-8 383908-37-0
 383908-39-2 383908-41-6 383908-43-8
 383908-45-0 383908-48-3 383908-50-7
 383908-52-9 383908-54-1 383908-56-3
 383908-57-4 383908-59-6 383908-61-0
 383908-83-6 383908-84-7

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (pos. type **radiation-sensitive** composition and process
 for producing **pattern** with the same)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L14 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:918945 CAPLUS

DOCUMENT NUMBER: 136:45683

TITLE: **Radiation-sensitive** resin

composition for chemical amplified resist

INVENTOR(S): Nishimura, Yukio; Yamahara, Noboru; Yamamoto, Masafumi; Kajita, Toru; Shimokawa, Tsutomu; Ito, Hiroshi

PATENT ASSIGNEE(S): JSR Corporation, Japan; International Business Machines Corporation

SOURCE: Eur. Pat. Appl., 63 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1164434	A2	20011219	EP 2001-114503	20010615
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002072484	A2	20020312	JP 2001-108824	20010406
US 2002009668	A1	20020124	US 2001-879894	20010614
CN 1332205	A	20020123	CN 2001-124927	20010615
TW 536661	B	20030611	TW 2001-90114559	20010615

PRIORITY APPLN. INFO.: JP 2000-182297 A 20000616
 JP 2001-108824 A 20010406

OTHER SOURCE(S): MARPAT 136:45683

AB A **radiation-sensitive** resin composition comprising an acid-labile group-containing resin and a photoacid generator is disclosed. The resin has a structure of X1R2COR1 (R1 = H, monovalent acid-labile group, C1-6 alkyl which does not have an acid-labile group, C2-7 alkylcarbonyl which does not have an acid-labile group; X1 = C1-4 fluorinated alkyl; and R2 = H, C1-10 alkyl, C1-10 fluorinated alkyl). The resin composition exhibits high transmittance of **radiation**, high **sensitivity**, resolution, and **pattern** shape, and is useful as a chemical amplified resist in producing semiconductors at a high yield.

IT 380886-69-1P 380886-71-5P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid-labile group-containing resin for **radiation-sensitive** resist composition)

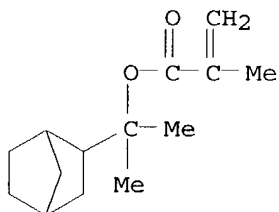
RN 380886-69-1 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-bicyclo[2.2.1]hept-2-yl-1-methylethyl ester, polymer with bicyclo[2.2.1]hept-2-ene, α,α -bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-ethanol and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 342014-18-0

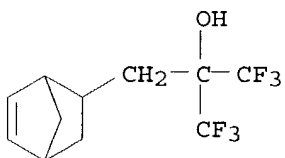
CMF C14 H22 O2



CM 2

CRN 196314-61-1

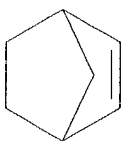
CMF C11 H12 F6 O



CM 3

CRN 498-66-8

CMF C7 H10

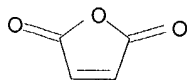


KOROMA EIC1700

CM 4

CRN 108-31-6

CMF C4 H2 O3



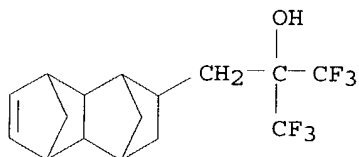
RN 380886-71-5 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-bicyclo[2.2.1]hept-2-yl-1-methylethyl ester, polymer with bicyclo[2.2.1]hept-2-ene, 2,5-furandione and 1,2,3,4,4a,5,8,8a-octahydro- α,α -bis(trifluoromethyl)-1,4:5,8-dimethanonaphthalene-2-ethanol (9CI) (CA INDEX NAME)

CM 1

CRN 365533-00-2

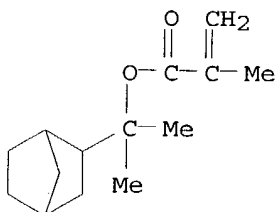
CMF C16 H18 F6 O



CM 2

CRN 342014-18-0

CMF C14 H22 O2

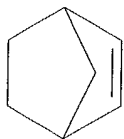


CM 3

CRN 498-66-8

KOROMA EIC1700

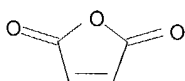
CMF C7 H10



CM 4

CRN 108-31-6

CMF C4 H2 O3



IC ICM G03F007-004
ICS G03F007-039

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 35, 38, 76

ST chem amplified **radiation electron beam**
photoresist microfabrication

IT Photoresists
(acid-labile group-containing resin for **radiation-sensitive** resist composition)

IT Polyalkenamers
RL: SPN (Synthetic preparation); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(acid-labile group-containing resin for **radiation-sensitive** resist composition)

IT Semiconductor device fabrication
(**radiation-sensitive** resist composition for)

IT 1116-76-3, Tri-n-octylamine 2052-49-5, Tetra-n-butylammoniumhydroxide
4847-93-2, 3-Piperidino-1,2-propanediol 193810-83-2,
N-tert-Butoxycarbonyl-2-phenylbenzimidazole 330576-56-2,
N-tert-Butoxycarbonyldicyclohexylamine
RL: TEM (Technical or engineered material use); USES (Uses)
(acid diffusion control agent for **radiation-sensitive**
resist composition)

IT 144317-44-2, Triphenylsulfonium nonafluoro-n-butanesulfonate 194999-85-4
213740-80-8 307531-76-6 330576-58-4 380886-84-0
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator for **radiation-sensitive** resist
composition)

IT 370099-14-2P 370102-83-3P 380886-62-4P 380886-63-5P 380886-66-8P

KOROMA EIC1700

380886-68-0P 380886-69-1P 380886-70-4P 380886-71-5P
 380886-72-6DP, hydrogenated 380886-72-6P 380886-73-7DP, hydrogenated
 380886-74-8DP, hydrogenated 380886-74-8P 380886-75-9DP, hydrogenated
 380886-76-0DP, hydrogenated 380886-76-0P 380886-77-1DP, hydrogenated
 380886-78-2P 380886-79-3P 380886-80-6P 380886-81-7P 380886-82-8P
 380886-83-9P 380915-67-3P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(acid-labile group-containing resin for **radiation-sensitive** resist composition)

IT 157692-53-0, tert-Butyl deoxycholate 169228-97-1, Di-tert-butyl
 1,3-adamantanedicarboxylate 231296-44-9, t-Butoxycarbonylmethyldeoxycho-
 late 296242-01-8

RL: TEM (Technical or engineered material use); USES (Uses)

(alicyclic additive for **radiation-sensitive** resist composition)

IT 77-73-6, Dicyclopentadiene 542-92-7, Cyclopentadiene, reactions
 646-97-9, 1,1-Bis(trifluoromethyl)-3-buten-1-ol 5292-43-3, tert-Butyl
 bromoacetate

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of acid-labile group-containing resin for **radiation-sensitive** resist composition)

IT 196314-61-1P 196314-63-3P 365533-00-2P 380886-59-9P 380886-60-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)

(preparation of acid-labile group-containing resin for **radiation-sensitive** resist composition)

L14 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:796370 CAPLUS

DOCUMENT NUMBER: 135:336915

TITLE: Electron attracting group-containing polymers,
 high-resolution resist compositions having good
 transparency, and **electron-beam** or
 deep-UV micropatterning process for VLSI fabrication

INVENTOR(S): Hasegawa, Koji; Nishi, Tsunehiro; Kinsho, Takeshi;
 Watanabe, Takeru; Nakashima, Mutsuo; Tachibana,
 Seeichiro; Hatakeyama, Jun

PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 43 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

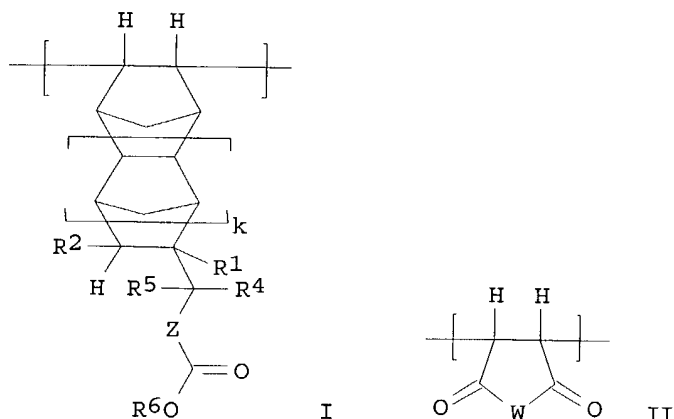
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150166	A1	20011031	EP 2001-303868	20010427
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002012632	A2	20020115	JP 2001-123992	20010423

KOROMA EIC1700

US 2001051316	A1	20011213	US 2001-842396	20010426
US 6566038	B2	20030520		
PRIORITY APPLN. INFO.:			JP 2000-129042	A 20000428
GI				



AB The polymer comprises (I) and (II) ($R_1 = H, HC_3, CH_2CO_2R_3$; $R_2 = H, CH_3, CO_2R_3$; $R_3 = \text{alkyl}$; $R_4 = \text{halo, acyloxy, alkoxy, alkoxy carbonyloxy, alkylsulfonyloxy}$; $R_5 = H, \text{alkyl}$; $R_6 = \text{acid labile group}$; $Z = \text{single bond, divalent hydrocarbon}$; $k = 0, 1$; and $W = -O-, -(NR)-$; $R = H, \text{alkyl}$). The resist composition comprising the polymer as a base resin is **sensitive to high-energy radiation**, has excellent **sensitivity**, resolution and etching resistance, and lends itself to micropatterning with **electron beams** or deep UV ray.

IT 370556-82-4p

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(synthesis of polymer featuring robustness and transparency for deep-UV photoresist suitable for micropatterning in VLSI fabrication)

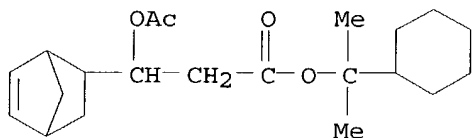
RN 370556-82-4 CAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-propanoic acid, β -(acetyloxy)-,
1-cyclohexyl-1-methylethyl ester, polymer with 2,5-furandione (9CI) (CA
INDEX NAME)

CM 1

CRN 370556-81-3

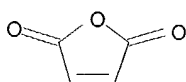
CMF C21 H32 04



CM 2

CRN 108-31-6

CMF C4 H2 O3



IC ICM G03F007-039
ICS G03F007-004; C08F222-06; C08F232-08

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76

ST cyclic polymer resist **pattern** acid labile group
microfabrication; deep UV photoresist **electron beam**
resist photolithogrpahy; photoresist deep UV **electron beam** resist photolithog; **electron beam** resist
photolithog deep UV photoresist; phontolithog deep UV photoresist **electron beam** resist

IT **Electron beam** resists
Photolithography
Semiconductor device fabrication
Electron beam lithography
Photoresists
RL: RACT (Reactant or reagent)
(for resist compns. containing photoacid generator and polymer and dissoln. regulator suitable for micropatterning in VLSI fabrication)

IT 81-25-4 102-71-6, uses 102-82-9 828-51-3 66003-78-9 84540-57-8,
PGMEA 122752-67-4 144317-44-2 211919-60-7 218770-96-8
308141-03-9 308141-06-2 336617-56-2
RL: TEM (Technical or engineered material use); USES (Uses)
(resist composition components; for resist compns. containing photoacid generator and polymer and dissoln. regulator suitable for micropatterning in VLSI fabrication)

IT 370556-76-6P 370556-78-8P 370556-80-2P **370556-82-4P**
370556-84-6P 370556-85-7P 370556-87-9P 370556-88-0P 370556-89-1P
370556-90-4P 370556-91-5P 371148-24-2P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(synthesis of polymer featuring robustness and transparency for deep-UV

photoresist suitable for micropatterning in VLSI fabrication)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L14 ANSWER 15 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:796274 CAPLUS

DOCUMENT NUMBER: 135:336914

TITLE: Ester compounds, polymers, resist compositions and patterning process

INVENTOR(S): Hasegawa, Koji; Nishi, Tsunehiro; Kinsho, Takeshi; Watanabe, Takeru; Nakashima, Mutsuo; Tachibana, Seiichiro; Hatakeyama, Jun

PATENT ASSIGNEE(S): Shin-Etsu Chemical Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 45 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1149825	A2	20011031	EP 2001-303867	20010427
EP 1149825	A3	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002012622	A2	20020115	JP 2001-124005	20010423
US 2002007031	A1	20020117	US 2001-842007	20010426
US 6531627	B2	20030311		
US 2003088115	A1	20030508	US 2002-288514	20021106
US 6670498	B2	20031230		

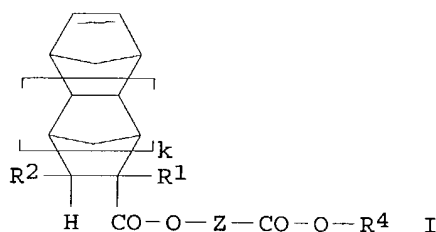
PRIORITY APPLN. INFO.:

JP 2000-127532 A 20000427

US 2001-842007 A3 20010426

OTHER SOURCE(S): MARPAT 135:336914

GI



AB The present invention provides an ester compound of formula I (R₁ = H, Me or CH₂CO₂R₃; R₂ = H, Me or CO₂R₃; R₃ = C₁-15 alkyl, R₄ = branched or cyclic, tertiary C₅-20 alkyl group; Z = divalent C₁-10 hydrocarbon group; and k = 0 or 1). A photoresist composition comprising as the base resin a polymer resulting from the ester compound is **sensitive** to high-energy

radiation, has excellent **sensitivity**, resolution, and etching resistance, and is suited for micropatterning using **electron beams** or deep-UV.

IT 370088-98-5p

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of ester compound and polymers for photoresist compns. and **patterning** process)

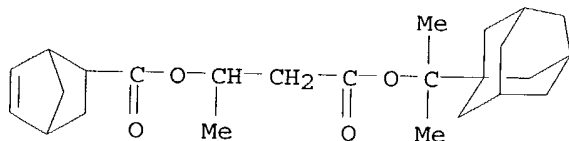
RN 370088-98-5 CAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-methyl-3-(1-methyl-1-tricyclo[3.3.1.1^{3,7}]dec-1-ylethoxy)-3-oxopropyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 370088-92-9

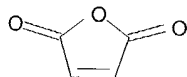
CMF C25 H36 O4



CM 2

CRN 108-31-6

CMF C4 H2 O3



IC ICM C07C069-716

ICS G03F007-039; C08F020-16; C07C067-14; C07C067-31

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38

ST photoresist ester resin **patterning**

IT Photolithography

(UV; **patterning** of photoresists from ester compds. and polymers)

IT Photoresists

(preparation of ester compound and polymers for photoresist compns. and **patterning** process)

IT 75-07-0, Acetaldehyde, reactions 27063-48-5 370088-86-1

RL: RCT (Reactant); RACT (Reactant or reagent)

KOROMA EIC1700

(preparation of ester compound and polymers for photoresist compns. and
patterning process)

IT 370088-87-2P 370088-88-3P 370088-89-4P 370088-90-7P 370088-91-8P
 370088-92-9P 370088-93-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)

(preparation of ester compound and polymers for photoresist compns. and
patterning process)

IT 370088-94-1P 370088-95-2P 370088-96-3P 370088-97-4P
370088-98-5P 370088-99-6P 370089-00-2P 370089-01-3P
 370089-02-4P 370089-04-6P 370089-05-7P 370089-06-8P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)

(preparation of ester compound and polymers for photoresist compns. and
patterning process)

L14 ANSWER 16 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:541842 CAPLUS

DOCUMENT NUMBER: 135:129572

TITLE: **Radiation-sensitive** chemically
 amplified positive resists and their
patterning

INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Obayashi, Gentaro

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

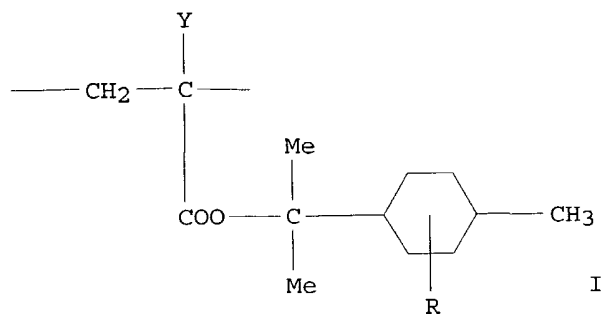
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001201854	A2	20010727	JP 2000-7617	20000117
PRIORITY APPLN. INFO.:			JP 2000-7617	20000117

GI



AB The compns. for fine **patterns** of $\leq 25 \mu\text{m}$ contain (A) polymers bearing structure units $\text{CH}_2\text{CX}(\text{CO}_2\text{T})$ (X = halo, cyano; T = organic group bearing ≥ 1 terpenoid framework) or I (Y = H, Me, halo, cyano; R = C1-10 hydroarbyl, OH) and (B) **radiation-sensitive** acid generators. The compns. have high sensitivity and high resolution

IT 351196-11-7P 351196-13-9P 351196-14-0P
351196-16-2P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**radiation-sensitive** chemical amplified pos. resists for subquarter-micron **patterns**)

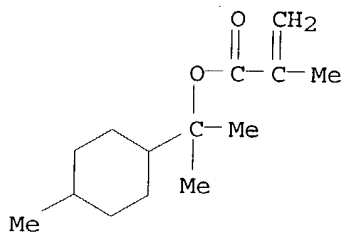
RN 351196-11-7 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-(4-methylcyclohexyl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 351196-10-6

CMF C14 H24 O2



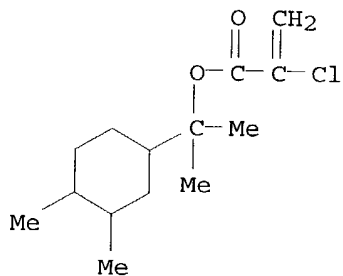
RN 351196-13-9 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-(3,4-dimethylcyclohexyl)-1-methylethyl ester, polymer with 4-(1-methylethenyl)phenol (9CI) (CA INDEX NAME)

CM 1

CRN 351196-12-8

CMF C14 H23 Cl O2

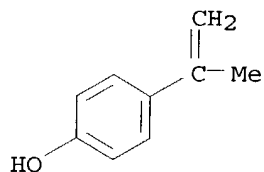


KOROMA EIC1700

CM 2

CRN 4286-23-1

CMF C9 H10 O



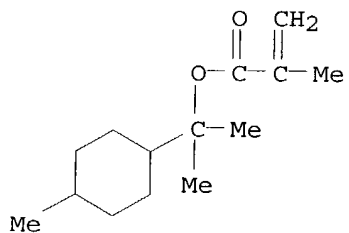
RN 351196-14-0 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-methyl-1-phenylethyl ester, polymer with
1-methyl-1-(4-methylcyclohexyl)ethyl 2-methyl-2-propenoate (9CI) (CA
INDEX NAME)

CM 1

CRN 351196-10-6

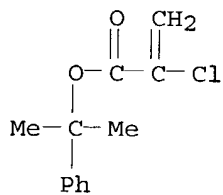
CMF C14 H24 O2



CM 2

CRN 100653-95-0

CMF C12 H13 Cl O2

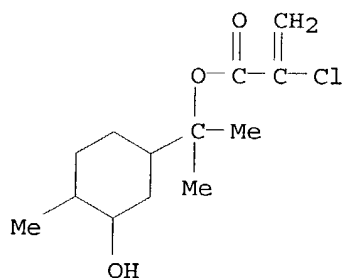


KOROMA EIC1700

RN 351196-16-2 CAPLUS
 CN 2-Propenoic acid, 2-chloro-, 1-(3-hydroxy-4-methylcyclohexyl)-1-methylethyl ester, polymer with 2-hydroxyethyl 2-methyl-2-propenoate (9CI)
 (CA INDEX NAME)

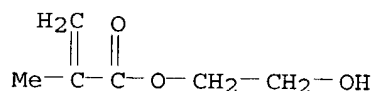
CM 1

CRN 351196-15-1
 CMF C13 H21 Cl O3



CM 2

CRN 868-77-9
 CMF C6 H10 O3



IC ICM G03F007-039
 ICS C08L033-06; G03F007-004
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 ST **radiation sensitive** chem amplified pos resist;
 acrylate polymer chem amplified pos resist; terpenoid acrylate polymer pos resist; menthyl deriv acrylate polymer pos resist
 IT Resists
 (pos.-working **radiation-sensitive**;
radiation-sensitive chemical amplified pos. resists for subquarter-micron **patterns**)
 IT **Electron beam** resists
 (pos.-working; **radiation-sensitive** chemical amplified pos. resists for subquarter-micron **patterns**)
 IT 66003-78-9, Triphenylsulfonium triflate
 RL: CAT (Catalyst use); USES (Uses)
 (acid generators; **radiation-sensitive** chemical amplified pos. resists for subquarter-micron **patterns**)

KOROMA EIC1700

IT 351196-07-1P 351196-09-3P 351196-11-7P 351196-13-9P
351196-14-0P 351196-16-2P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**radiation-sensitive** chemical amplified pos. resists for subquarter-micron **patterns**)

L14 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:541841 CAPLUS

DOCUMENT NUMBER: 135:129571

TITLE: **Radiation-sensitive** chemically amplified positive resist compositions and their **patterning**

INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Obayashi, Gentaro

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001201853	A2	20010727	JP 2000-7616	20000117
PRIORITY APPLN. INFO.:			JP 2000-7616	20000117

AB The compns. for fine **patterns** of $\leq 0.25 \mu\text{m}$ contain (A) polymers constituted of repeating units bearing structures which form alkali-soluble groups by acids and crosslinked sites shown as $\text{CH}_2\text{CHXCO}_2\text{YOC(O)CHXCH}_2$ (X = halo, cyano; Y = C1-20 organic group) and (B) **radiation-sensitive** acid generators.

IT 350810-96-7P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**radiation-sensitive** chemical amplified pos. resist compns. for subquarter-micron **patterns**)

RN 350810-96-7 CAPLUS

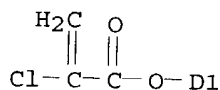
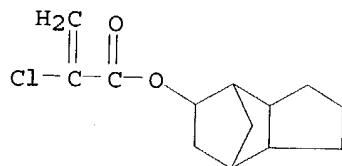
CN 2-Propenoic acid, 2-chloro-, octahydro-4,7-methano-1H-indene-5,?-diyl ester, polymer with 1-methyl-1-phenylethyl 2-chloro-2-propenoate (9CI)
(CA INDEX NAME)

CM 1

CRN 350810-95-6

CMF C16 H18 Cl2 O4

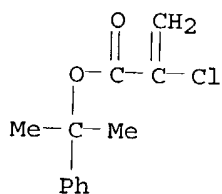
CCI IDS



CM 2

CRN 100653-95-0

CMF C12 H13 Cl O2



IC ICM G03F007-039

ICS H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST **radiation sensitive** chem amplified pos resist;
ethylene glycol difluoroacrylate copolymer pos resist; diacrylate
copolymer chem amplified pos resist; **electron beam** pos
resist diacrylate copolymer

IT Resists

(pos.-working **radiation-sensitive**;
radiation-sensitive chemical amplified pos. resist
comps. for subquarter-micron **patterns**)

IT **Electron beam** resists

(pos.-working; **radiation-sensitive** chemical amplified
pos. resist comps. for subquarter-micron **patterns**)

IT 66003-78-9, Triphenylsulfonium triflate

RL: CAT (Catalyst use); USES (Uses)

(acid generators; **radiation-sensitive** chemical

amplified pos. resist comps. for subquarter-micron **patterns**)

IT 350707-30-1P 350707-32-3P 350707-34-5P **350810-96-7P**

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)

(**radiation-sensitive** chemical amplified pos. resist

KOROMA EIC1700

compns. for subquarter-micron **patterns**)

L14 ANSWER 18 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:521144 CAPLUS

DOCUMENT NUMBER: 135:99857

TITLE: Positive-working **radiation-sensitive**
resist composition suitable for sub-quartermicron
patterning

INVENTOR(S): Tamura, Kazutaka; Nio, Hiroyuki; Obayashi, Gentaro

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001194790	A2	20010719	JP 2000-4306	20000113
PRIORITY APPLN. INFO.:			JP 2000-4306	20000113

AB The title composition comprises a polymer having a structural repeating unit of $\text{CH}_2:\text{C}(\text{CO}_2\text{A})\text{X}$ [X = F-containing alkyl; A = aromatic] and having Tg of 80-150° and a **radiation**-acid generator. The composition is suitable for fabricating semiconductor devices and lithog. masks.

IT **111339-20-9P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(in pos.-working **radiation-sensitive** composition suitable for sub-quartermicron **patterning**)

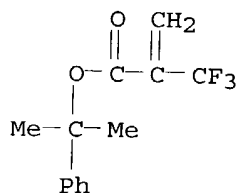
RN 111339-20-9 CAPLUS

CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1-methyl-1-phenylethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 111339-19-6

CMF C13 H13 F3 O2



IC ICM G03F007-039

ICS H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

KOROMA EIC1700

Section cross-reference(s): 38, 76

ST pos working **radiation sensitive** resist compn sub
quartermicron **patterning**

IT **Electron beam** resists
Photomasks (lithographic masks)
Photoresists
Semiconductor device fabrication
(pos.-working **radiation-sensitive** composition suitable
for sub-quartermicron **patterning**)

IT 66003-78-9, Triphenylsulfoniumtriflate
RL: TEM (Technical or engineered material use); USES (Uses)
(acid generator in pos.-working **radiation-sensitive**
composition suitable for sub-quartermicron **patterning**)

IT **111339-20-9P** 349577-24-8P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(in pos.-working **radiation-sensitive** composition
suitable for sub-quartermicron **patterning**)

L14 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:749076 CAPLUS

DOCUMENT NUMBER: 133:327664

TITLE: Positive-working **radiation-sensitive**
composition and resist **pattern** formation
using same

INVENTOR(S): Nio, Hiroyuki; Tamura, Kazutaka; Obayashi, Gentaro

PATENT ASSIGNEE(S): Toray Industries, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000298346	A2	20001024	JP 1999-106857	19990414
PRIORITY APPLN. INFO.:			JP 1999-106857	19990414

AB The title **radiation-sensitive** composition contains (A) a
polymer having structural units CH₂CX(COA) and CH₂CY(CO₂G) (X = halo or
CN; Y = C1-4 alkyl, halo, CN; A = organic group having ≥1 silyl group;
G = C1-10 haloalkyl, haloaryl, haloaralkyl) in which A is an organic group
that is cleaved by the action of acid to form an alkali-soluble group and (B)
an acid generator generating an acid by irradiation with **radiation**.
The composition is coated on a substrate, dried, **patternwise** exposed,
and developed to form a **pattern**. The composition useful for production
of semiconductor integrated circuits and masks for lithog. shows high
sensitivity and provides sub-quarter micron **patterns**.

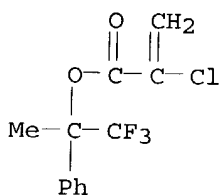
IT **302806-96-8P**
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(**radiation-sensitive** resist composition containing

acid-decomposable polymer with silyl group and acid generator)
 RN 302806-96-8 CAPLUS
 CN 2-Propenoic acid, 2-chloro-, 2,2,2-trifluoro-1-methyl-1-phenylethyl ester,
 polymer with 2-[4-[(trimethylsilyl)oxy]phenyl]ethyl 2-chloro-2-propenoate
 (9CI) (CA INDEX NAME)

CM 1

CRN 302806-95-7

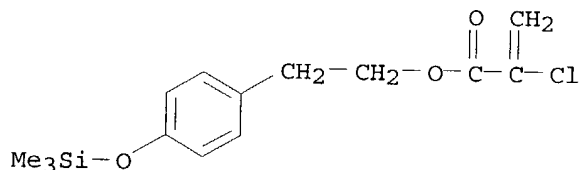
CMF C12 H10 Cl F3 O2



CM 2

CRN 302784-17-4

CMF C14 H19 Cl O3 Si



IC ICM G03F007-039
 ICS G03F007-075; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 38
 ST **radiation** resist pos acid generator; silyl acrylate copolymer
radiation resist
 IT **Electron beam** resists
 (radiation-sensitive resist composition containing
 acid-decomposable polymer with silyl group and acid generator)
 IT 288160-90-7P 288160-91-8P
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);
 RACT (Reactant or reagent)
 (preparation acrylic acid ester compound)
 IT 75-77-4, Trimethylsilyl chloride, reactions 501-94-0, p-Hydroxyphenethyl
 alcohol 565-64-0, 2,3-Dichloropropionic acid 3219-63-4, Trimethylsilyl
 methanol 13058-24-7 41885-43-2, 2-Dimethylphenylsilyl ethanol

RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation acrylic acid ester compound)

IT 302784-15-2P, 2-Dimethylphenylsilylethyl α -chloroacrylate
 302784-17-4P, p-Trimethylsiloxyphenethyl α -chloroacrylate
 302806-98-0P
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);
 RACT (Reactant or reagent)
 (preparation and polymerization of)

IT 41965-71-3P, α -Bromoacrylic acid chloride
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);
 RACT (Reactant or reagent)
 (preparation of amide compound)

IT 123-30-8, 4-Aminophenol 10443-65-9, α -Bromoacrylic acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of amide compound)

IT 302806-87-7P 302806-90-2P 302806-93-5P **302806-96-8P**
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (**radiation-sensitive** resist composition containing
 acid-decomposable polymer with silyl group and acid generator)

IT 66003-78-9, Triphenylsulfonium triflate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**radiation-sensitive** resist composition containing
 acid-decomposable polymer with silyl group and acid generator)

L14 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1989:505809 CAPLUS

DOCUMENT NUMBER: 111:105809

TITLE: Positive **radiation-sensitive**
 resist from halogenated polyacrylate

INVENTOR(S): Tsutsumi, Yoshitaka; Seita, Toru; Matsumara,
 Kousaburou; Nagaoka, Kyoko; Yanagihara, Toshimitsu

PATENT ASSIGNEE(S): Tosoh Corp., Japan

SOURCE: Eur. Pat. Appl., 6 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

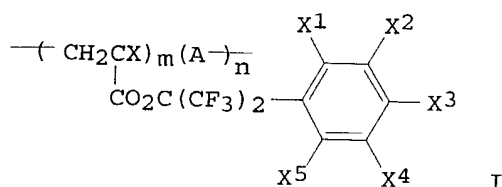
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 304082	A2	19890222	EP 1988-113511	19880819
EP 304082	A3	19900822		
R: BE, DE, FR, GB, NL				
JP 01049039	A2	19890223	JP 1987-205155	19870820
US 4983495	A	19910108	US 1989-456624	19891229
PRIORITY APPLN. INFO.:			JP 1987-205155	19870820
			US 1988-235410	19880822

GI



AB A pos.-working resist which is highly sensitive to **electron beams**, x-rays, and deep UV **radiations** and provides high-resolution resist **patterns** of improved dry etching resistance is prepared from a halogenated poly(acrylic acid ester) having the general formula I (A = a structural unit derived from ethylenically unsatd. monomers; X = halogen or Me; m = a pos. integer; n = 0 or a pos. integer with n/m = 0-2 and m + n = 20-20,000; X1-5 = H or F with ≥ 1 of X1-5 = F). A in I may be selected from acrylic acid esters, methacrylic acid esters, α -substituted acrylic acid esters, unsatd. carboxylic acids, acid amides, aromatic vinyl compds., acrylonitrile, and methacrylonitrile.

IT 30943-41-0 122269-37-8

RL: USES (Uses)

(**electron beam** pos.-working resists from, for forming high-resolution dry-etching-resistant **patterns**)

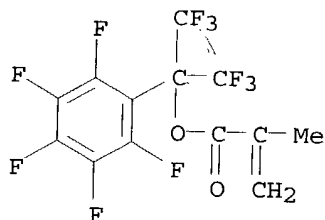
RN 30943-41-0 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 2,2,2-trifluoro-1-(pentafluorophenyl)-1-(trifluoromethyl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 30947-60-5

CMF C13 H5 F11 O2



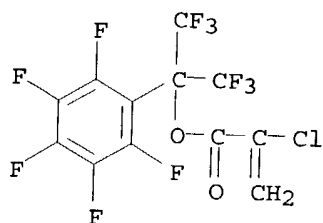
RN 122269-37-8 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 2,2,2-trifluoro-1-(pentafluorophenyl)-1-(trifluoromethyl)ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122269-36-7

CMF C12 H2 Cl F11 O2



IC ICM G03F007-10
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 ST electron pos resist halogenated polyacrylate; lithog pos resist halogenated polyacrylate; x ray pos resist halogenated polyacrylate
 IT Resists
 (electron-beam, pos.-working, halogenated poly(acrylic acid ester) as)
 IT Resists
 (photo-, pos., deep-UV, halogenated poly(acrylic acid ester) as)
 IT Resists
 (x-ray, pos., halogenated poly(acrylic acid ester) as)
 IT 30943-41-0 122269-37-8
 RL: USES (Uses)
 (electron beam pos.-working resists from, for forming high-resolution dry-etching-resistant patterns)

L14 ANSWER 21 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1986:99534 CAPLUS
 DOCUMENT NUMBER: 104:99534
 TITLE: Positive-working resist materials
 INVENTOR(S): Akimoto, Seiji
 PATENT ASSIGNEE(S): Fujitsu Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60179737	A2	19850913	JP 1984-35136	19840228
PRIORITY APPLN. INFO.:			JP 1984-35136	19840228

AB The title materials are composed of an alkali-soluble α -methylstyrene polymer and dimethylbenzyl α -chloroacrylate homopolymer. The materials show improved sensitivity to radiation and high resistances to dry etching and heat. Thus, poly(p-hydroxy- α -methylstyrene) [weight average mol. weight (.hivin.Mw) = 15,000; .hivin.Mw/.hivin.Mn (number average mol. weight) = 1.1] was prepared from p-hydroxy- α -methylstyrene by substituting the H of OH with trialkylsilyl and by anionic polymerization

followed by hydrolysis. The obtained polymer was dissolved in Me cellosolve acetate together with 20% poly(dimethylbenzyl α -chloroacrylate) (.hivin.Mw .apprx.1 + 105; .hivin.Mw/.hivin.Mn = 1.3) and coated on a substrate to give a 1- μ resist layer. After prebaking at 85° for 40 min, the layer was **patternwise** irradiated with an **electron beam**, and treated in an alkali developer to give a resist **pattern** showing a sensitivity of $5 + 10^{-6}$ C/cm², a resolving power of 1 μ , and resistances to dry etching and heat as good as those of a poly(α -methylstyrene) resist.

IT 100653-96-1

RL: USES (Uses)

(**electron-beam** resist containing poly(hydroxymethylstyrene) and, pos.-working)

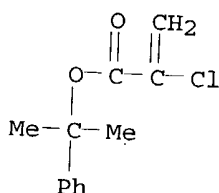
RN 100653-96-1 CAPLUS

CN 2-Propenoic acid, 2-chloro-, 1-methyl-1-phenylethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100653-95-0

CMF C12 H13 Cl O2



IC ICM G03C001-72

ICS G03F007-10

ICA G03C005-08

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST pos **radiation** resist methylstyrene polymer; methylbenzyl chloroacrylate polymer **radiation** resist

IT Resists

(**electron-beam**, pos.-working, containing alkali-soluble methylstyrene polymer and poly(dimethylbenzyl chloroacrylate))

IT 51032-74-7

RL: USES (Uses)

(**electron-beam** resist containing poly(dimethylbenzyl chloroacrylate) and, pos.-working)

IT 100653-96-1

RL: USES (Uses)

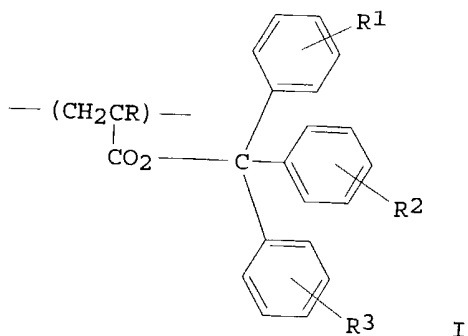
(**electron-beam** resist containing poly(hydroxymethylstyrene) and, pos.-working)

L14 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

KOROMA EIC1700

ACCESSION NUMBER: 1985:140874 CAPLUS
 DOCUMENT NUMBER: 102:140874
 TITLE: **Radiation-sensitive** polymers
 PATENT ASSIGNEE(S): Hitachi, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 59075244	A2	19840427	JP 1982-186017	19821025
JP 01060812	B4	19891226		
PRIORITY APPLN. INFO.: GI			JP 1982-186017	19821025



AB **Radiation-sensitive** resists consist of a polymer having the repeating unit of the general formula I ($R = \text{Me, Et, Pr, Ph}$; $R_1, R_2, R_3 = \text{H, aryl, aralkyl}$). The resists may also include copolymers containing I and an addition-polymerizing monomer having the $\text{H}_2\text{C}=\text{C}:$ group as well as copolymers containing I and Me methacrylate. The resists exhibit high sensitivity to high energy beams and may be developed by alkaline solns. because irradiation produces drastic decrease of mol. weight and formation of carboxyl groups. The resists are useful in fine **pattern** formation suitable for electronic element fabrication. Thus, trityl methacrylate was prepared by the reaction of Ag methacrylate with trityl chloride. The obtained trityl methacrylate 0.16 and Me methacrylate 0.95 g were copolymd. in PhMe using azobisisobutyronitrile as a catalyst to obtain a copolymer containing trityl methacrylate unit 5 mol%. A 5% solution of the copolymer in PhMe was spin-coated on a Si wafer to form a $0.3\text{-}\mu$ layer, prebaked at 100° for 1 h, **patternwise** irradiated

by an **electron beam**, and immersed in a 2.5 weight% solution of NaOMe in MeOH. Min. irradiation for complete removal of the exposed layer was $3 + 10^{-6}$ C/cm², which was 2 orders smaller than that for a similar material using poly(Me methacrylate).

IT 55993-85-6

RL: USES (Uses)

(**electron-beam** resists, for electronic component fabrication)

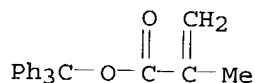
RN 55993-85-6 CAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with triphenylmethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 19302-93-3

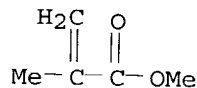
CMF C23 H20 O2



CM 2

CRN 80-62-6

CMF C5 H8 O2



IC G03C001-72; C08F020-18; G03C005-08

ICA C08F002-54

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST trityl methacrylate copolymer **radiation** resist; electron resist
trityl methacrylate copolymer

IT Semiconductor devices

(trityl methacrylate copolymer **electron-beam** resists for fabrication of)

IT Resists

(**electron-beam**, trityl methacrylate polymer and copolymers as)

IT Electric circuits

(integrated, trityl methacrylate copolymer **electron-beam** resists for fabrication of)

IT Resists

(**radiation-sensitive**, trityl methacrylate polymer

and copolymers as)

IT 124-41-4
RL: USES (Uses)
(developing solution containing, for Me methacrylate-trityl methacrylate copolymer **electron-beam** resists)

IT 55993-85-6
RL: USES (Uses)
(**electron-beam** resists, for electronic component fabrication)

IT 19302-93-3P
RL: PREP (Preparation)
(preparation of, by reaction of silver methacrylate with trityl chloride for preparation of **electron-beam** resists)

IT 76-83-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with silver methacrylate in preparation of trityl methacrylate for preparation of **electron-beam** resists)

IT 16631-02-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with trityl chloride in preparation of trityl methacrylate for preparation of **electron-beam** resists)

L14 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

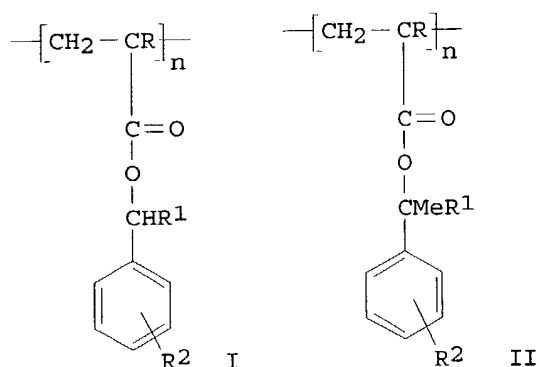
ACCESSION NUMBER: 1984:520487 CAPLUS
DOCUMENT NUMBER: 101:120487
TITLE: **Radiation-sensitive** resists
PATENT ASSIGNEE(S): Hitachi, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 58068743	A2	19830423	JP 1981-167173	19811021
PRIORITY APPLN. INFO.: GI			JP 1981-167173	19811021



AB **Electron-beam-**, x-ray-, ion-beam-sensitive
 pos.-type resists are based on an organic polymer I [R = Me, Et, Pr, Ph; R¹ = H, alkyl, aryl, aralkyl; R² = H, alkyl, aryl, aralkyl, halo] or II [R = Me, Et, Pr, Ph; R¹ = alkyl, aryl, alkyl; R² = H, alkyl, aryl, aralkyl, halo, n = d.p.] capable of forming CO₂H groups on irradiation with high energy **radiation**. The resists are useful in semiconductor devices, magnetic bubble memory devices, integrated circuit fabrication, etc. requiring fine **pattern** formation.

IT 55993-86-7 91227-16-6

RL: USES (Uses)

(**radiation** resists from, for semiconductor device manufacture)

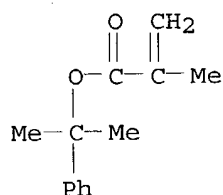
RN 55993-86-7 CAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
 1-methyl-1-phenylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 54554-17-5

CMF C13 H16 O2

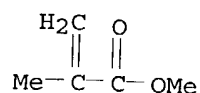


CM 2

CRN 80-62-6

CMF C5 H8 O2

KOROMA EIC1700



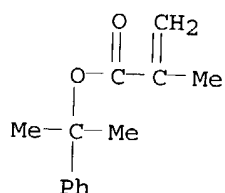
RN 91227-16-6 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, polymer with (1-methylethenyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 54554-17-5

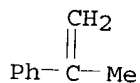
CMF C13 H16 O2



CM 2

CRN 98-83-9

CMF C9 H10



IC G03C001-72; C08F020-10

ICA C08F020-22

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 76, 77

ST resist **radiation** semiconductor device

IT Semiconductor devices

(fabrication of, **radiation** resists for, from benzylstyrenecarboxylate polymers)

IT Resists

(**radiation**, pos.-type, containing benzylstyrenecarboxylate polymers)

IT 19321-42-7P 54554-17-5P

RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)

IT 25085-84-1 55993-86-7 91227-16-6 91227-17-7 91227-18-8

RL: USES (Uses)

(**radiation** resists from, for semiconductor device manufacture)

IT 920-46-7

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with dimethylbenzyl alc.)

IT 91-01-0 98-85-1 617-94-7

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with methacryloyl chloride)

L14 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1984:165447 CAPLUS

DOCUMENT NUMBER: 100:165447

TITLE: Electron resist composition

PATENT ASSIGNEE(S): Fujitsu Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 58184944	A2	19831028	JP 1982-68986	19820423
JP 03054332	B4	19910819		

PRIORITY APPLN. INFO.: JP 1982-68986 19820423

AB **Pattern** forming materials consist of poly(dimethylbenzyl methacrylate) (I) and an alkaline soluble organic polymer. The materials offer **radiation sensitive** pos. resists having strong resistance to dry etching. Thus, poly(p-hydroxystyrene) 95 and I 5 weight% were dissolved in methylcellosolve acetate to prepare 25 weight% solution, spin-coated on a wafer to form a resist layer 1 μ thick, **patternwise** exposed with 20 keV **electron beam**, and developed with an aqueous solution of an organic amine (50% aqueous solution of MF 312 developer, Shipley). The resist **pattern** upon plasma etching using CHF₃ showed an etching rate one-tenth that of PMMA, indicating good dry etching resistance.

IT 56963-83-8

RL: USES (Uses)

(**electron-beam** resist material containing alkaline-soluble organic polymer and, with good dry etching resistance)

RN 56963-83-8 CAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-methyl-1-phenylethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 54554-17-5

CMF C13 H16 O2